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Environmental Impact Statement NV063-EIS07-019

DATE: October 2012

MOUNT HOPE PROJECT
FINAL
ENVIRONMENTAL IMPACT STATEMENT
VOLUME I of III

File Number: NVN-082096
File Number: NVN-084632
File Number: NVN-091272

Cooperating Agencies:
Eureka County
National Park Service
Nevada Department of Wildlife

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BUREAU OF LAND MANAGEMENT MISSION STATEMENT

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MOUNT HOPE PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT

OCTOBER 2012

Lead Agency:	U.S. Department of Interior Bureau of Land Management Mount Lewis Field Office
Cooperating Agencies:	Eureka County National Park Service Nevada Department of Wildlife
Project Location:	Eureka County, Nevada
EIS Number:	NV063-EIS07-019
Plan of Operations Number:	NVN-082096
Right-of-Way Numbers:	NVN-084632 **NVN-091272**
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ABSTRACT

The Mount Hope Project is located on public land administered by the Bureau of Land Management and on private land controlled by Eureka Moly, LLC. The 80-year project would have an 18- **to 24-**month construction phase, 44 years of mining and ore processing, 30 years of reclamation, and five years of post-closure monitoring. Concurrent reclamation would not commence until after the first 15 years of the Project. The Mount Hope ore body contains approximately 966 million tons of molybdenite (molybdenum disulfide) ore that would produce approximately 1.1 billion pounds of recoverable molybdenum during the ore processing time frame. Approximately 1.7 billion tons of waste rock would be produced by the end of the 32-year mine life and approximately 1.0 billion tons of tailings would be produced by the end of the 44 years of ore processing. Optimal development of the molybdenum deposit, to meet the market conditions and maximize molybdenum production, would utilize an open pit mining method and would process the mined ore using a flotation and roasting process. The surface disturbance associated with the proposed activities totals 8,3**55** acres on both public and private lands.

Responsible Official for the EIS:	Christopher J. Cook Field Manager Mount Lewis Field Office

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MOUNT HOPE PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT

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ACRONYMS AND ABBREVIATIONS

Reader Note: Refer to the list below for abbreviations or acronyms that may be used in this document.

>	greater than **(in a table)**
<	less than **(in a table)**
24/7	24 hours per day / seven days per week
ABA	Acid Base Accounting
afy	acre feet per year
Ag	Silver
AGP	Acid Generating Potential
AHPA	Archaeological and Historic Preservation Act of 1974
AIRFA	American Indian Religious Freedom Act
Al	Aluminum
AML	Appropriate management level
amsl	above mean sea level
ANFO	Ammonium nitrate/fuel oil mixture
ANSI	American National Standards Institute
AP	Acidification potential
APE	Area of Potential Effect
AQMA	Air Quality Management Area
ARD	Acid Rock Drainage
ARPA	Archaeological Resources Protection Act of 1979
As	Arsenic
Au	Gold
AUM	Animal unit month
BAPC	Bureau of Air Pollution Control
BAQP	Bureau of Air Quality Planning
BBA	Brown-Buntin Associates, Inc.
BCCRT	Basic City-County Relief Tax
BCLLC/ SDLLC	Blankenship Consulting LLC and Sammons/Dutton Consulting LLC
Be	Beryllium
BEA	Bureau of Economic Analysis
bgs	below ground surface
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
BMDO	Battle Mountain District Office
BMPs	Best Management Practices
BMRR	Bureau of Mining Regulation and Reclamation
B.P.	Before Present
BPIP	Building Profile Input Program
C	**Carbon**
Ca	**Calcium**
CAA	Clean Air Act

CAAA	Clean Air Act Amendments of 1990
$CaCO_3$	Calcium Carbonate
Cd	Cadmium
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
cfs	cubic feet per second
cm/sec	centimeters per second
CN	Curve number
CO_2(e)	Carbon dioxide equivalent
CO	Carbon monoxide
CNIDC	Central Nevada Interagency Dispatch Center
Cu	Copper
CWA	Clean Water Act
dB	**Decibels**
dBA	Decibels (A-weighted)
(^{o})	Degree
^{o}F	Degrees Fahrenheit
DEM	Digital Elevation Model
DMV	Nevada Department of Motor Vehicles
DOE	Department of Energy
DWS	Drinking Water Standards
EA	Environmental Assessment
ECI	Electrical Consultants, Inc.
ECSD	Eureka County School District
Eh	Reduction potential
EIS	Environmental Impact Statement
EML	Eureka Moly LLC
EMS	Emergency Medical Services
EMTs	Emergency Management Technicians
ENM	Environmental Noise Model
EO	Executive Order
EPA	Environmental Protection Agency
EPCM	Engineering, Procurement and Construction Management
EPCRA	Emergency Planning and Community Right-To-Know Act
ESA	Endangered Species Act
ET	Evapotranspiration
F	Fluorine
Fe	Iron
FeMo	Ferromolybdenum
FeSi	Ferrosilicon alloy
FIFRA	**Federal Insecticide, Fungicide, and Rodenticide Act**

FLPMA	Federal Land Policy and Management Act
FMCSA	Federal Motor Carrier Safety Administration
FMU	Fire Management Unit
FMUD	Final Multiple Use Decision
FR	**Federal Register**
FTE	Full Time Equivalent
g	Gravity
GBCGR	Great Basin Center for Geothermal Research
GHG	Greenhouse gas
GID	General improvement district
GIS	Geographic Information System
GMMP	Growth Media Management Plan
gpd	gallons per day
gpm	gallons per minute
GPS	Global Positioning System
H	Horizontal
H_2SO_4	sulfuric acid
HA	Herd Area
HAP	Hazardous air pollutant
HCT	Humidity cell test
HDPE	High density polyethylene
HFRA	Healthy Forests Restoration Act
Hg	Mercury
HMA	Herd Management Area
Hp	Horsepower
HSA	Hydrologic Study Area
HSWA	Hazardous and Solid Waste Amendments
ICP	Induced Coupled Plasma
IM	Instruction Memorandum
IMC	Independent Mining Consultants
IMP	Interim Management P**olicy**
InSAR	Interferometric Synthetic Aperture Radar
Interflow	Interflow Hydrology
I-80	Interstate 80
JBR	JBR Environmental Consultants, Inc.
IPCC	Intergovernmental Panel on Climate Change
K	coefficient of permeability
kg	kilogram
KOP	Key observation point
Ktons	1,000 tons
kV	kilovolt
KVCWF	Kobeh Valley Central Well Field
kW	kilowatt

L_{dn}	Level day/night
L_{eq}	Average noise level
L_{50}	Median noise level
LCR	Lahontan Cutthroat Recovery
LCRS	Leak Collection and Recovery System
LCT	Lahontan cutthroat trout
Li	Lithium
LLDPE	Linear low density polyethylene
LGO	Low-grade ore
LPAG	Limited potentially acid generating (in a table)
LSST	Local School Support Tax
LTFM	**Long-Term Funding Mechanism**
m	meters (in a table)
Ma	Million years ago
MBTA	Migratory Bird Treaty Act
MCL	Maximum contaminant level
MDBM	Mount Diablo Base and Meridian
MDD	Maximum Daily Demand
mg	milligrams
mg/kg	**milligrams per kilogram**
mg/L	**milligrams per liter**
mg/m^3	milligrams per cubic meter
$\mu g/L$	micrograms per liter (in a table)
$\mu g/m^3$	micrograms per cubic meter (in a table)
MIBC	**Methyl Isobutyl Carbinol (MIBC)**
mil	One thousandth of an inch (1 mil = 0.001 inch)
MLFO	Mount Lewis Field Office
MLRA	Major Land Resource Area
mm	Millimeters
MMPA	Mining and Mineral Policy Act of 1970
Mn	**Manganese**
Mo	Molybdenum
MOU	Memorandum of Understanding
Mph	Miles per hour
MS	Mass spectrometry
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
MTP	Master Title Plat
MW	megawatt
MWMP	Meteoric Water Mobility Procedure
N	Nitrogen
Na	Sodium
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code

NAD	North American **D**atum
NAG	Net acid generating
NAGPRA	Native American Graves Protection and Repatriation Act
NAIP	National Agricultural Imaging Program
NASS	Nevada Agricultural Statistics Service
NDE	Nevada Department of Education
NDEP	Nevada Division of Environmental Protection
NDETR	Nevada Department of Employment, Training and Rehabilitation
NDF	Nevada Division of Forestry
NDOA	Nevada Department of Agriculture
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDPS	Nevada Department of Public Safety
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NFP	**National Forest Plan**
NFS	National Forest System
NHPA	National Historic Preservation Act
Ni	Nickel
NMCP	Nevada Mercury Control Program
NNHP	Nevada Natural Heritage Program
NNP	Net neutralizing potential (NP-GP)
NNPS	Nevada Native Plant Society
NO_2	Nitrogen dioxide
NOAEL	No Observed Adverse Effect Level
NOI	Notice of Intent
Non-PAG	Non-potentially acid generating
NP	Neutralization Potential
NPDES	National Pollution Discharge Elimination System
NPEA	National Pony Express Association
NPR	Neutralization potential ratio
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NSAAQS	Nevada **S**tate **A**mbient **A**ir **Q**uality **S**tandards
NSO	Nevada State Office of the Bureau of Land Management
NSPS	New source performance standards
NvMACT	Nevada **M**aximum **A**chievable **C**ontrol **T**echnology
NWIS	National Water Information Service
NWS	National Weather Service
O_3	Ozone
OHV	Off-highway vehicle

OHWM	Ordinary high water mark
OPLMA	Omnibus Public Land Management Act
oz/yd^2	ounces per square yard
PA	Programmatic Agreement
PAG	Potentially acid generating
Pb	Lead
PC	**Primary crusher (in a table)**
PCRI	Properties of **C**ultural or **R**eligious **I**mportance
PFC	**Properly functioning condition**
PFYC	Potential **F**ossil **Y**ield **C**lassification
PGH	**Preliminary General Habitat**
pH	Potential of hydrogen
PHGA	Peak horizontal ground acceleration
PILT	Payments in Lieu of Taxes
Plan	Plan of Operations
$PM_{2.5}$	Particulate matter less than 2.5 micrometers in aerodynamic diameter
PM_{10}	Particulate matter less than 10 micrometers in aerodynamic diameter
POD	Plan of Development
ppb	**parts per billion**
ppm	parts per million
PPH	**Preliminary Priority Habitat**
PRP	**Paleontological Resources Preservation**
PRIME	Plume Rise Mode Enhancement
PRISM	Precipitation-Elevation Regressions on Independent Slopes Model
Project	Mount Hope Project
PRPA	Paleontological Resource Protection Act
PSD	Prevention of significant deterioration
PWR	Public Water Reserve
RAS	**Rangeland Administration System**
RCRA	Resource Conservation and Recovery Act
RFFA	Reasonably Foreseeable Future Action
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-way
RPS	**Rangeland Program Summary**
RUSLE2	Revised Uniform Soil Loss Equation
RV	Recreational Vehicle
S	Sulfur
SA	Sensitivity Analysis
SAG	Semi-autogenous grinding
SARA	Superfund Amendment and Reauthorization Act of 1986
Sb	Antimony
SB	Senate Bill
Sc	Selenium

SCCRT	Supplemental City-County Relief Tax
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SEL	Sound Exposure levels
SHPO	State Historic Preservation Office
Si	Silicon
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Site
SLERA	Screening level ecological risk assessment
SMP	**Species Management Plan**
Sn	Tin
SO_2	Sulfur dioxide
SO_4	Sulfate
SR	State Route
SRK	SRK Consulting, Inc.
SSURGO	Soil survey geographic database
st/d	Short tons per day
st/y	Short tons per year
SWC	Smith Williams Consultants, Inc.
TCP	Traditional cultural property
TCW	Temporary construction worker
TDS	Total dissolved solids
Th	Thorium
Tl	Thallium **(in a table)**
TMO	Technical grade molybdenite oxide
Tpd	Tons per day
Tph	Tons per hour
TPH	Total petroleum hydrocarbons
Tpy	Tons per year
TRI	Toxics release inventory
TRV	Toxicity reference values
TSF	Tailings storage facility
TV	Television (in a table)
UBC	Uniform Building Code
UNR	University of Nevada, Reno
U.S.	United States
USACE	U.S. Army Corps of Engineer
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDOI	United States Department of Interior
USDOT	United States Department of Transportation
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

UTM	Universal Transverse Mercator (in a table)
V	Vertical
VFD	Volunteer Fire Department
VFS	Volunteer Fire Service
VOC	Volatile organic compounds (in a table footnote)
VRM	Visual Resources Management
W	Tungsten
WEG	Wind erodibility group
WFRHBA	Wild Free-Roaming Horses and Burros Act of 1971
WPCP	Water Pollution Control Permit
WRCC	Western Regional Climate Center
WRDF	Waste rock disposal facility
WRMP	Waste Rock Management Plan
WSA	Wilderness Study Area
WWTF	Waste Water Treatment Facility
yd^3	Cubic yard
Zn	Zinc

EXECUTIVE SUMMARY

Purpose of this Document

Eureka Moly, LLC plans to develop the Mount Hope Project in central Nevada approximately 23 miles northwest of Eureka, Nevada. The Mount Hope Project is located on public land administered by the Bureau of Land Management and on private land controlled by Eureka Moly, LLC. The specifics of the Mount Hope Project are outlined in the Mount Hope Project Plan of Operations, submitted in June 2006, and most recently revised in July 201**2**.

This **Final** Environmental Impact Statement has been prepared by the Bureau of Land Management, the Lead Agency with respect to compliance with the National Environmental Policy Act and its implementing regulations, and with the following Cooperating Agencies: Nevada Department of Wildlife, Eureka County, and the National Park Service. The purpose of this document is to analyze the environmental effects of the Proposed Action, associated with the proposal by Eureka Moly, LLC to develop the Mount Hope open pit mine, as well as alternatives to the Proposed Action.

The purpose of the **Final** Environmental Impact Statement is to inform decision makers in all federal agencies required to approve authorizing actions, as well as state and local governments and the public, of the anticipated significant environmental effects of the Proposed Action, the possible ways to mitigate any significant effects associated with the Proposed Action, and reasonable alternatives, which could feasibly reduce the significant environmental impacts of the Proposed Action. The information in an Environmental Impact Statement does not control an agency's discretion on a project.

The **Final** Environmental Impact Statement has been prepared in **three** volumes with appendices. All technical documents used to support this **Final** Environmental Impact Statement are available for review during normal business hours (Monday through Friday, excluding holidays, from 7:30 a.m. to 4:30 p.m.) at the Bureau of Land Management's Mount Lewis Field Office in Battle Mountain, Nevada.

Proposed Action

The Proposed Action consists of three connected actions. The first action consists of the activities proposed in the Plan of Operations. The remaining actions are associated with the two rights-of-way applications and associated Plans of Development.

The 80-year Mount Hope Project would have an 18- **to 24-**month construction phase, 44 years of mining and ore processing, 30 years of reclamation, and five years of post-closure monitoring. There would be no concurrent reclamation during the first 15 years of the Mount Hope Project. The years of operation presented in this Environmental Impact Statement are anticipated; however, there is a potential that the timing of the implementation or duration of components of the Mount Hope Project could vary. The Mount Hope ore body contains approximately 966 million tons of molybdenite (molybdenum disulfide) ore that would produce approximately 1.1 billion pounds of recoverable molybdenum during the ore processing time frame. Approximately 1.7 billion tons of waste rock would be produced by the end of the 32-year mine life and approximately 1.0 billion tons of tailings would be produced by the end of the 44 years of ore processing. Optimal development of the molybdenum deposit to meet the market conditions and maximize molybdenum production would utilize an open pit mining method and would process the mined ore using a flotation and roasting process. The location of the waste rock disposal facilities, the tailings disposal facilities, and the mill and roasting facilities adjacent to the open pit would be the most efficient location to meet Eureka Moly LLC's needs for the Mount Hope Project.

The Mount Hope Project would consist of the following: a) an open pit with a life of approximately 32 years and associated pit dewatering; b) waste rock disposal facilities where waste rock would be segregated according to its potential to generate acid rock drainage; c) milling facilities including a crusher, conveyors, semi-autogenous grinding and ball mills, flotation circuits, concentrate dewatering, ferric chloride concentrate leach circuit, and filtration and drying circuits that would operate for approximately 44 years; d) a molybdenite concentrate roaster and packaging plant to package the technical grade molybdenum oxide in bags, cans, or drums; e) a ferromolybdenum plant for production of ferromolybdenum alloy using a metallothermic process and separate packaging plant for drums and bags; f) two tailings storage facilities and associated tails delivery and water reclaim systems; g) an ongoing exploration program utilizing drilling equipment, roads, pads, and sumps; h) Low-Grade Ore Stockpile that would feed the mill after mining ceases; i) water supply development with associated wells, water delivery pipelines, access roads, and power in the Kobeh Valley Well Field Area; j) a 24-mile, 230-kilovolt electric power supply line from the existing Machacek substation, with a substation and distribution system located in the Project Area. The powerline would join the existing Falcon-Gondor 345-kilovolt line right-of-way near the Town of Eureka and follow the existing utility corridor to the Project Area; k) a realigned section of the existing Falcon-Gondor powerline, which would require the filing of a separate right-of-way amendment at the time it is needed (near Year 36); l) ancillary facilities including haul, secondary, and exploration roads, a ready line, warehouse and maintenance facilities, storm water diversions, sediment control basins, pipeline corridors, reagent and diesel storage, storage and laydown yards, ammonium nitrate silos, explosives magazines, fresh/fire suppression water storage and a process water storage pond, monitoring wells, an administration building, a security/first aid building, a helipad, a laboratory, growth media/cover stockpiles, borrow areas, mine power loop, communications equipment, hazardous waste management facilities, a Class III waivered landfill, and an area to store and treat petroleum contaminated soils; m) turn lane**(s)** on State Route 278; n) the option for the receipt of off-site concentrates for toll roasting; and o) the closure of the tailings storage facility and the potentially acid generating waste rock disposal facility with the use of evapotranspiration cells to manage the long-term discharge from these facilities, as well as the physical reclamation of Project components. The surface disturbance associated with these proposed activities totals 8,3**55** acres.

No Action Alternative

In accordance with Bureau of Land Management's National Environmental Policy Act Handbook H-1790-1, Section 6.6.2 (BLM 2008a), an Environmental Impact Statement evaluates the No Action Alternative. The objective of the No Action Alternative is to describe the environmental consequences that would result if the Proposed Action were not implemented. The No Action Alternative forms the baseline from which impacts of all other alternatives can be measured.

Under the No Action Alternative, Eureka Moly, LLC would not be authorized to develop the Mount Hope Project and mine the Mount Hope ore body as currently defined under the Proposed Action. The No Action Alternative would result from the Bureau of Land Management disallowing the activities proposed under the Plan of Operation. However, Eureka Moly, LLC would be able to continue permitted exploration activities as outlined in previously submitted notices. The area would remain available for future mineral development or for other purposes as approved by the Bureau of Land Management.

Partial Backfill Alternative

Under this alternative, the Proposed Action would be developed as outlined and have the same surface disturbance footprint. However, at the end of the mining in the open pit, the open pit would be partially backfilled to eliminate the potential for a pit lake. The pre-mining ground water elevation in the vicinity of the open pit varies from northwest to southeast across the open pit from approximately 7,200 to 6,750 feet above mean sea level. Therefore, the open pit would be backfilled to an elevation that varies from northwest to southeast across the open pit from approximately 7,300 to 6,850 feet above mean sea level. The Partial Backfill Alternative addresses potential impacts associated with a pit lake that would develop under the Proposed Action.

The backfilling would commence in Year 32 and be completed in approximately 13 years (95 million tons per year). The partial backfilling would be accomplished by the same fleet and personnel that completed the mining, and as a result, employment would be approximately 370 employees through the end of ore processing (Year 44) and then there would be a reduction in staffing from Year 44 through the completion of the partial backfilling (Year 45). The partial backfilling would be completed using approximately 1.3 billion tons of waste rock, which would comprise all the waste rock from the Non-Potentially Acid Generating Waste Rock Disposal Facility resulting in an elimination of the Non-Potentially Acid Generating Waste Rock Disposal Facility. This material would be removed from the completed waste rock disposal facilities and transported back to the open pit. The partial backfilling would need to be completed to an elevation that ranges across the open pit from 7,300 to 6,850 feet above mean sea level. As a result of this alternative, the mining fleet and the associated employees would continue beyond the end of the mining sequence to complete the backfilling activities. Tax revenues would be similar to the Proposed Action over the 44-year life of this alternative. Under this alternative, the floor of the open pit would be reclaimed with an application of growth media and then seeded with a BLM approved seed mix.

Off-Site Transfer of Ore Concentrate for Processing Alternative

Under this alternative, the open pit, waste rock disposal facilities, and tailings disposal facilities would be developed as outlined under the Proposed Action; however, the ore processing facilities would include only the milling operations to produce molybdenum sulfide concentrate. The technical grade molybdenum oxide and the ferromolybdenum portions of the processing facility would not be constructed, and as a result, the surface disturbance footprint would be approximately 20 acres less than under the Proposed Action. In addition, the leaching of the concentrate would likely not be done on site. The production of molybdenum sulfide concentrate would occur at an average rate of approximately 45.8 million pounds per year. This material would be stored at the Project Area in a concentrate storage structure adjacent to the mill. The molybdenum sulfide concentrate would be loaded from this storage facility into street legal haul trucks with covered containers and transported on the public transportation system to either an existing or new facility. Employment, relative to the Proposed Action, would be reduced by approximately 30 individuals. Tax revenues would be similar to the Proposed Action over the 44-year life of this alternative.

The Slower, Longer Project Alternative

Under this alternative the Project would operate at approximately one-half the production rate as described in the Proposed Action, which would result in a project that would last approximately twice as long as the Proposed Action.

Under this alternative, the currently planned 96 million short tons per year mining rate would be reduced to 48 million short tons per year and the mill throughput would be reduced from 60,500 tons per day of ore to 30,313 tons per day. Although salable molybdenum production on an annual basis would drop in half, the ultimate mine and associated waste and low-grade stockpiles, process plant, and tailing impoundments would still cover the same area, creating the same amount of disturbance; however, **some aspects of environmental disturbance (i.e., wildlife) would be greater due to the extended duration and impacts to additional springs**.

Under this alternative, smaller equipment than outlined under the Proposed Action would need to be purchased. Thus, the manufacture lead times for this new equipment may result in construction time frames that are longer than outlined in the Proposed Action, because the equipment is not yet available. This would also delay the commencement of operations of the Project. The Project production time frame under this alternative would extend to at least 88 years.

It is likely that initial capital costs for this alternative would be reduced; however, this difference cannot be quantified without completing a re-design of the facilities. It is expected that sustaining capital costs would actually increase due to the much-extended operating life and operating cost (expressed as total cost per pound of production) would rise due to increased proportion of fixed costs and the higher per unit of ore variable costs of a smaller scale operation. More serious diseconomies of scale would affect the plant during the final two decades of production when treating the low-grade ore (grading 0.042 percent molybdenum), which would be set aside for milling following the end of the open pit mining phase.

An alternative with half the annual production of the Proposed Action has not been designed **since this alternative was not determined to be economically feasible by EML**; however, for the sake of comparison, there are several facets of a half-production rate project that could be anticipated. Mining and processing equipment would be smaller, as would ancillary facilities (powerline supply and well field **infrastructure** for example). However, ultimate disturbance from the tailings impoundments, open pit, and waste rock disposal facilities would eventually grow to the same size as in the proposed Project, albeit at half the rate. Water consumption rates would be approximately half, although economies of scale (lower per unit operational costs when there are greater throughputs) would be lost, and water consumption on a per-unit basis would be higher than in the Proposed Action (i.e., more evaporation on a per unit basis than under the Proposed Action) **because the open water in the tailings pond would exist for twice as long**

during the processing of the same amount of ore. **Therefore, this alternative would likely result in twice as much evaporation.** The smaller plant size would likely result in a slight decrease in the number of construction employees. Operations employees would be less than that required for the Proposed Action (regardless of the size of mine or mill equipment, it generally takes the same number of employees to operate and maintain it). It is estimated that the decrease in operations employment for this alternative would be about 30 percent. The employment timeframe would be twice as long as under the Proposed Action. Reagent consumption would be the same on a per-unit (of production) basis, but the smaller consumption rate would decrease storage requirements and material shipments. Profitability would be reduced relative to the Proposed Action, as would tax revenues, because of the higher costs for every pound of molybdenum produced while receiving the same price as the Proposed Action for each pound of molybdenum. Tax revenues would be reduced by approximately 40 percent, relative to the Proposed Action, in the first 44 years of this alternative.

While the Slower, Longer Project Alternative may not meet the purpose and need as stated in the Environmental Impact Statement, the Bureau of Land Management elected to analyze this alternative in detail at the request of a cooperating agency (Eureka County). The Bureau of Land Management's decision is consistent with its responsibility as the lead agency according to "A Desk Guide to Cooperating Agency Relationships and Coordination with Intergovernmental Partners" and 40 Code of Federal Regulations 1501.6.

Alternatives Considered and Eliminated From Detailed Consideration

As outlined in the Environmental Impact Statement, several alternatives were identified for consideration in this **Final** Environmental Impact Statement. The following is a discussion of those alternatives identified through the scoping process, including alternatives identified by the public that have been eliminated from detailed consideration in this **Final** Environmental Impact Statement. The alternatives were considered relative to their means of addressing the identified purpose and need, their technological feasibility, and their potential to address environmental issues and reduce potential impacts to a level less than significant when compared to the Proposed Action.

The analysis of alternatives in this Environmental Impact Statement is based on the following criteria: a) public or agency concern; b) technical feasibility; c) potential to reduce an environmental impact of the Proposed Action; d) ability to meet the purpose of and need for the Proposed Action; and e) compliance with regulatory and legal guidance (i.e., **Mining and** Mineral Policy Act of 1970).

Complete Backfill Alternative

This alternative is eliminated from detailed consideration because it would involve the complete backfilling of the proposed Mount Hope open pit with Mount Hope overburden and waste rock material in the two waste rock disposal facilities. A Complete Backfill Alternative would primarily address potential visual impacts **and evaporation impacts** associated with the Proposed Action. The intent of this alternative is not to address issues associated with the development of a pit lake, since that issue is addressed under the Partial Backfill Alternative. The

Partial Backfill Alternative is discussed above, and the associated impacts are outlined in Table ES-1.

Based on the mine plan and pit configuration, backfilling could not begin until the end of the mining sequence. Under this alternative, the same amount of surface disturbance would occur as under the Proposed Action because the backfill material would be hauled to the waste rock disposal facilities so that the Mount Hope open pit could be mined. Once the ore was removed from the open pit, the waste rock and overburden would then be hauled back from the waste rock disposal facilities to the open pit. The backfill would likely commence in Year 32 and be complete in approximately Year 64, resulting in a project that is 20 years longer than the Proposed Action. The rim of the open pit has varying elevations. At the southeastern corner of the open pit, the pit rim elevation is approximately 6,900 feet above mean sea level. The northwestern corner of the open pit is part of the highwall cut into Mount Hope, which has an elevation of 8,200 feet above mean sea level. The ore to waste ratio is 1:1.6 and the swell factor for the volume difference for the mined and handled waste rock as compared to unmined rock is conservatively assumed to be 20 percent. Therefore, the waste rock volume would be insufficient to completely fill the open pit. As a result, the northwestern portion of the open pit would remain with a highwall on the southeastern flank of Mount Hope, and the waste rock disposal facilities would be eliminated. The complete backfilling of the open pit would be accomplished by the same fleet and personnel that completed the mining, and as a result, employment would be approximately 370 through the end of ore processing (Year 44) with a reduction in staffing from Year 44 through the completion of the complete backfilling (Year 64).

Backfilling the open pit would result in covering additional mineral resources that would not be currently considered ore, such as the lower grade molybdenum mineralization in the open pit wall and the other metal mineralization that is known to occur in the surrounding host rock adjacent to the open pit walls. Though not a reason to eliminate this alternative from detailed consideration, this scenario would be inconsistent with the Mining and Mineral Policy Act of 1970 (30 United States Code 21a) and the Materials and Mineral Policy, Research, and Development Act of 1980 (30 United States Code 1601) because it would reduce the opportunity for future mineral development associated with the mineralizing system in the Mount Hope area.

This alternative would decrease visual impacts from the Proposed Action to the Pony Express Historic Trail but not below the level of significance. Although visual impacts would be reduced, the area is classified as visual resource management Classes III and IV, and implementation of the Proposed Action would be consistent with the restrictions on visual resource management Class III and IV areas. The open pit would remain visible due to insufficient backfill material. This alternative would increase air quality impacts resulting from increased transport of waste rock material and would decrease the opportunity for future extraction of potential mineral resources. The mining work force for the project would be employed for a longer time period to accomplish the backfilling operations. In addition, this alternative would have similar potential impacts as the Partial Backfill Alternative. **Under this alternative, the ground water quality within the pit backfill would be anticipated to be impacted by waste materials (Non-PAG) deposited in the open pit and from infiltrating the runoff from pit walls. This poor-quality water could flow from the confines of the former pit shell into the surrounding ground water, degrading waters of the state.** For these reasons, the Complete Backfill Alternative does not meet the selection criteria and has been eliminated from detailed consideration.

Different Waste Rock Disposal Facility Heights Alternative

Under this alternative, the waste rock disposal facilities configurations would be changed so that the waste rock disposal facility heights would vary. Lower heights on the southern portion of the waste rock disposal facility would be established in an effort to reduce the impacts to the Historic Trail setting. As a result, the footprint of the waste rock disposal facilities would be increased to accommodate the change in storage volume. This would increase the time necessary to construct the waste rock disposal facilities, assuming the same equipment fleet as under the Proposed Action, and therefore increase the length of time necessary to complete the mining of the open pit. Therefore, activities under this alternative would occur over a longer time period when compared to the Proposed Action. This alternative would increase the amount of surface disturbance and, therefore, the impacts to vegetation, wildlife, and soils, as well as increase air emissions, due to an increase in the time frames for mining and longer haul distances, during the life of the Mount Hope Project. This alternative would decrease, but not substantially reduce, the impacts to the Pony Express Historic Trail setting when compared to the Proposed Action. For these reasons, the Different Waste Rock Disposal Facility Heights Alternative does not meet the selection criteria and has been eliminated from detailed consideration.

Different Facility Locations Outside the Project Area Alternative

This alternative considers different locations outside of the Project Area for major mine components (i.e., open pit, waste rock disposal, tailings facility), which would create the principle environmental impacts from the Proposed Action.

As part of the development of the Proposed Action by Eureka Moly, LLC, three basic tailings storage facility configurations were evaluated by Eureka Moly, LLC as follows: a) a tailings storage facility to the west of State Route 278 and east of the open pit; b) a tailings storage facility south of the Historic Trail; and c) a tailings storage facility to the east of State Route 278. The first configuration had three variations; the second and third configurations each had two variations. As a result, seven tailings storage facility configurations were considered by Eureka Moly, LLC during the development of their proposed Mount Hope Project. The configuration that was selected by Eureka Moly, LLC minimizes the potential impacts to State Route 278, Diamond Valley, deer migration routes, and the Pony Express Historic Trail.

The location of the proposed open pit is strictly dictated by the location of the identified ore deposit; therefore, no location alternatives for the open pit would be possible. The proposed location of the Mount Hope Project waste rock disposal facilities was selected by Eureka Moly, LLC after consideration of several operational, cost, and environmental factors that included the following: a) minimizing truck haul distance; b) minimizing the gradient from the open pit to the waste rock disposal facilities; c) adequate waste rock storage capacity; d) avoidance of sensitive environmental receptors; e) consolidation of mine facilities; and f) absence of suitable mining reserves underneath the waste rock disposal facilities.

Relocating either the waste rock disposal facilities or the tailings storage facilities as described in the Proposed Action to locations outside of the Project Area would not avoid any of the environmental effects, nor lessen below significance any of the significant environmental effects of the Proposed Action. This alternative would result in increased surface disturbance and air emissions associated with longer haul distances. The visual impacts under this alternative would not be lessened, but would be redistributed based on the location of the facilities. For these reasons, the Different Facility Locations Outside the Project Area Alternative does not meet the selection criteria and has been eliminated from detailed consideration.

Increased Ore Processing to Match the Mining Schedule Alternative

Under this alternative, the ore processing facility would process the ore at the same rate that it would be mined under the Proposed Action, thereby requiring construction of an ore processing facility with greater throughput capacity. As a result, the Mount Hope Project would be in operation for 32 years rather than 44 years under the Proposed Action. Under this alternative, there would be an approximately one to two percent increase in the number of employees above that expected under the Proposed Action. However, the length of employment for almost all the positions would only be 32 years.

This alternative would increase yearly air emissions during the life of the Mount Hope Project by approximately 50 percent and decrease employment opportunities due to the reduced life of the Mount Hope Project in comparison to the Proposed Action. Socioeconomic impacts, both positive and negative, would be reduced as compared to the Proposed Action because tax receipts and wages would occur over a shorter time period and not necessarily at a proportionally greater amount than under the Proposed Action. The demands on the local infrastructure made by employees and other Mount Hope Project-related individuals would be of shorter duration than the Proposed Action. Implementation of this alternative would not reduce any of the other environmental consequences of the Proposed Action and therefore, does not offer any environmental advantage in comparison with the Proposed Action. For these reasons, the Increased Ore Processing to Match the Mining Schedule Alternative does not meet the selection criteria and has been eliminated from detailed consideration.

Decreased Mining to Match the Ore Processing Schedule Alternative

Under this alternative, the mining rate would be decreased to match the ore processing rate under the Proposed Action. This alternative would decrease air emissions during the first 32 years of the Mount Hope Project due to the slower mining rates and increase air emissions during the last 12 years of the Mount Hope Project because mining would occur during these last 12 years of the ore processing in comparison with the Proposed Action. The alternative would extend and increase the ground water impacts due to the need to dewater the open pit for an additional 12 years, decrease employment opportunities due to the smaller mining operation, and change the socioeconomic impacts because of the smaller work force in comparison with the Proposed Action. The complete reclamation of the waste rock disposal facilities would be postponed. Implementation of this alternative would not result in any compelling environmental advantage relative to the Proposed Action. For these reasons, the Decreased Mining to Match the Ore Processing Schedule Alternative does not meet the selection criteria and has been eliminated from detailed consideration.

Reduced Project Alternative

A reduced Mount Hope Project would result in the construction of a smaller open pit and smaller associated facilities. As a result of the smaller scale operation under this alternative, there would be a reduction in the impacts to soils, vegetation, air quality, and ground water in comparison with the Proposed Action because there would be decreases in surface disturbance, air emissions, and water supply production. However, this alternative would increase the potential impacts to known mineral resources by not developing the defined mineral resource that would be mined under the Proposed Action, which would not be consistent with the national mineral policy outlined in the Mining and Mineral Policy Act of 1970 and the Materials and Mineral Policy, Research, and Development Act of 1980. This alternative does not meet the Purpose and Need of the Proposed Action as defined in Section 1.4 because the known mineral deposit would not be fully mined. For these reasons, the Reduced Project Alternative does not meet the criteria outlined above and has been eliminated from detailed consideration.

Different Facility Locations within the Project Area Alternative

This alternative considers different locations within the Project Area for the major mine facilities (i.e., open pit, tailings storage facilities, waste rock disposal facilities, and processing plant), which would create the principal impacts under the Proposed Action. As discussed above, an evaluation of different facility locations was conducted by Eureka Moly, LLC in their feasibility evaluation of the Mount Hope Project.

Analysis of different locations under this alternative is similar to that for the Different Facility Locations Outside the Project Area Alternative. This alternative does not meet the selection criteria and has been eliminated from detailed consideration because of the substantial logistical and transportation disadvantages, and because it would result in increased surface disturbance.

Different Powerline Alternative

Under this alternative, the Proposed Action would be developed; however, the connection to the regional power grid would be in a different location, as would the powerline route to the Mount Hope Project facilities.

A new substation for the Mount Hope Project would be located immediately south of the South Tailings Storage Facility where the NV Energy 345-kilovolt Falcon-Gondor powerline intersects the Project Area. The new substation would tie directly into the existing NV Energy 345-kilovolt Falcon-Gondor powerline. The substation would be designed to provide the power necessary for Mount Hope Project operation. From the new substation, the Mount Hope Project powerline would follow the same route through the Project Area as the powerline under the Proposed Action. This alternative would eliminate the need to construct a new powerline, adjacent to the Falcon-Gondor powerline from the existing Machacek Substation to the Project Area, through the western portion of Kobeh Valley.

Power for the Project was investigated by NV Energy in early 2007. NV Energy determined that two feasible power supply options existed for the Project. The 230-kV option with a tap at the Machacek Substation was selected over the 345-kV option. Design, cost, and reliability issues were considered. In addition, the 345-kV line serves as the “backbone” for electrical distribution in the area, which would make a tie-in problematic with respect to schedule and the duration of service interruption. As a result, the use of 345-kV line was determined to be technically infeasible. EML entered into a transmission agreement with NV Energy in late 2008 for 75 MW, substantiating that the 230-kV system at Machacek can provide sufficient power for the Project. The Project is located within the **NV Energy and** Mt. Wheeler Power service territory.

The viability of this alternative is uncertain because there may not be enough available power in the NV Energy powerline. This alternative does not meet the selection criteria and has been eliminated from detailed consideration because of the inability to define a viable power supply under this alternative.

Different Potentially Acid Generating Waste Rock Management Alternative

Under this alternative, the Proposed Action would be developed, except a different management technique would be used with the potentially acid generating waste rock. A single waste rock disposal facility would be constructed, and the potentially acid generating material would either be managed in isolation cells within the waste rock disposal facility or would be mixed with the other waste material throughout the life of the mining operation.

It is highly uncertain whether either of these management techniques would be successful in the management of the potentially acid generating material and thus minimize or eliminate the potential for the development of uncontrolled acid rock drainage or impacts to waters of the state. Segregation of potentially acid generating material has proven to provide better control of the reactive materials by reducing the size of the potential source area. The timing of the mining of the potentially acid generating versus other material would not allow for the mixing of the two types to minimize the potential for the migration of the leached constituents. This alternative does not meet the criteria outlined above and has been eliminated from detailed consideration because of the high degree of uncertainty and the likelihood for the development of uncontrolled acid rock drainage and potential impacts to waters of the state.

Important Issues and Impact Conclusions

The environmental consequences of, mitigation measures for, and level of significance of the environmental consequences before and after mitigation for the Proposed Action and the reasonable alternatives are summarized in Table ES-1.

Bureau of Land Management Preferred Alternative

Chapter 9, Section 9.2.7.3 of the Bureau of Land Management National Environmental Policy Act Handbook directs that an Environmental Impact Statement "…identify the agency's preferred alternative… For external proposals or applications, the proposed action may not turn out to be the BLM's preferred alternative, because the BLM will often present an alternative that would incorporate specific terms and conditions on the applicant."

Thus, the Bureau of Land Management has selected a Preferred Alternative based on the analysis in this **Final** Environmental Impact Statement; this Preferred Alternative is the alternative that best fulfills the agency's statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors. The Bureau of Land Management has determined that the Preferred Alternative is the Proposed Action as outlined in Chapter 2 of the **Final** Environmental Impact Statement, with the inclusion of the identified mitigation measures to the Proposed Action as specified in Chapter 3 of the **Final** Environmental Impact Statement.

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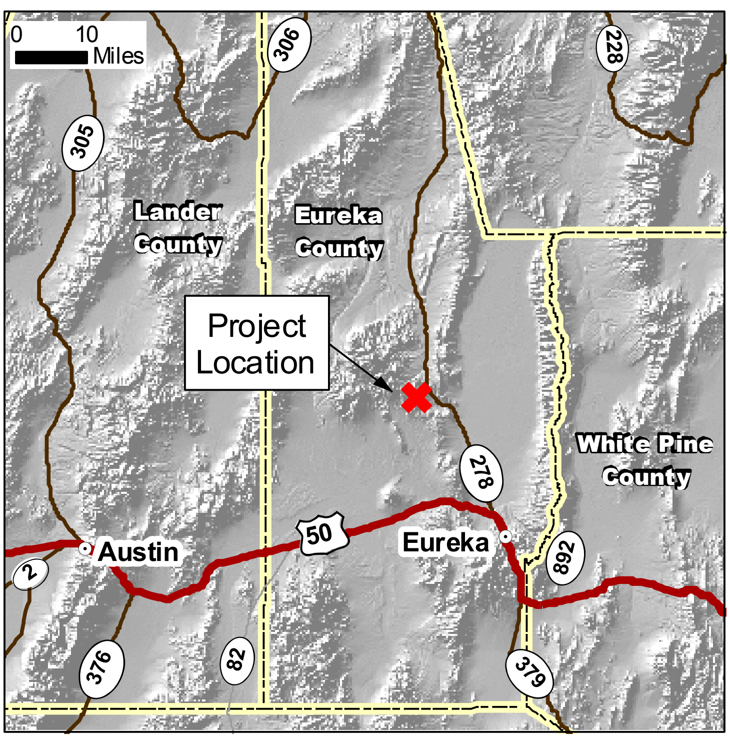

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Miles

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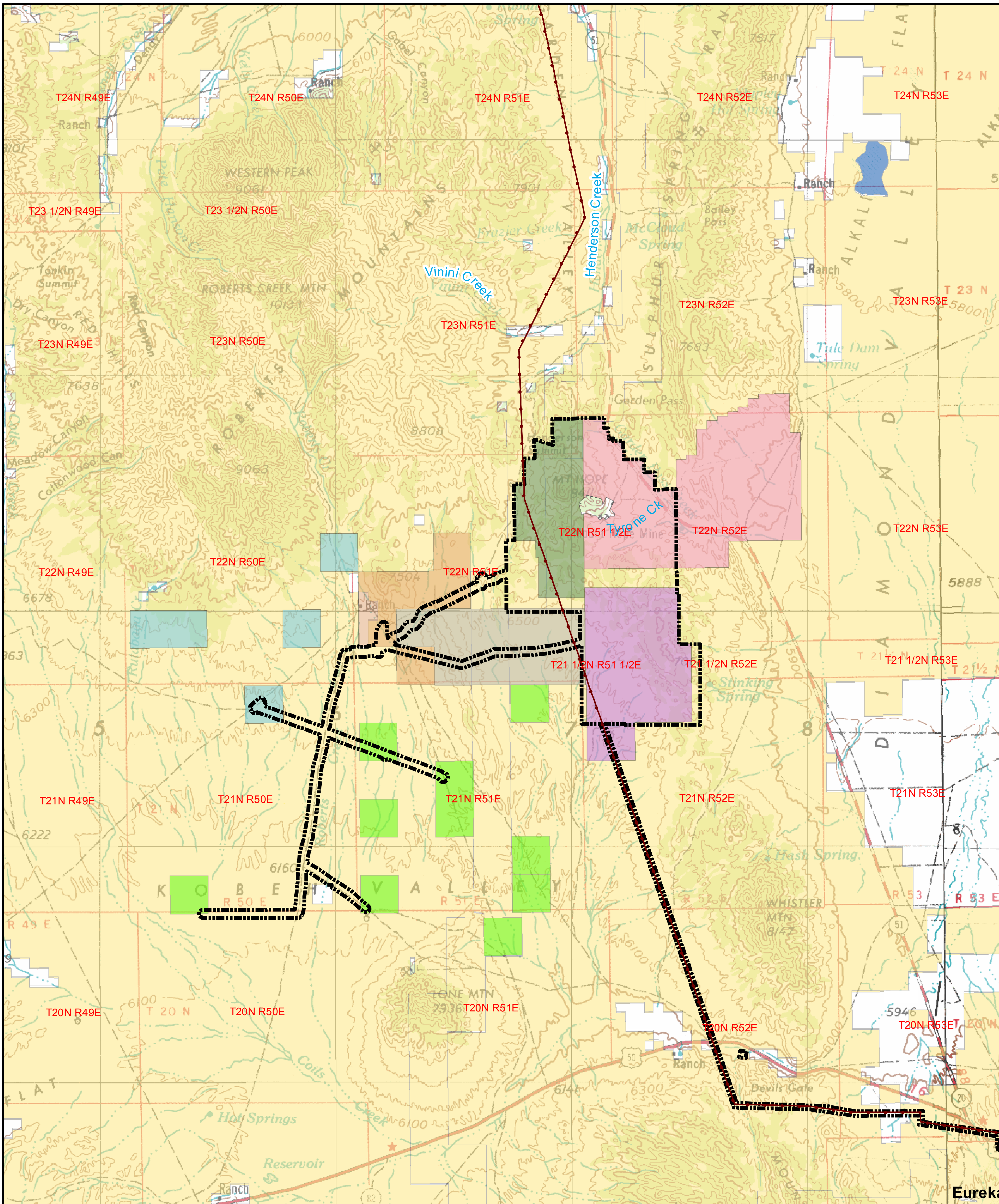
BUREAU OF LAND MANAGEMENT

MOUNT HOPE PROJECT

General Location Map

Figure ES.1



EXPLANATION

N

- Falcon-Gondor Power Line
- Project Boundary

Notice Boundaries

- NVN 080914
- NVN 081485
- NVN 087312
- NVN 083245
- NVN 083246
- NVN 081811
- NVN 090831

Land Status

- Public Land
- Private Land
- Water

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0 1 2 3 4 5 Miles

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BUREAU OF LAND MANAGEMENT

MOUNT HOPE PROJECT

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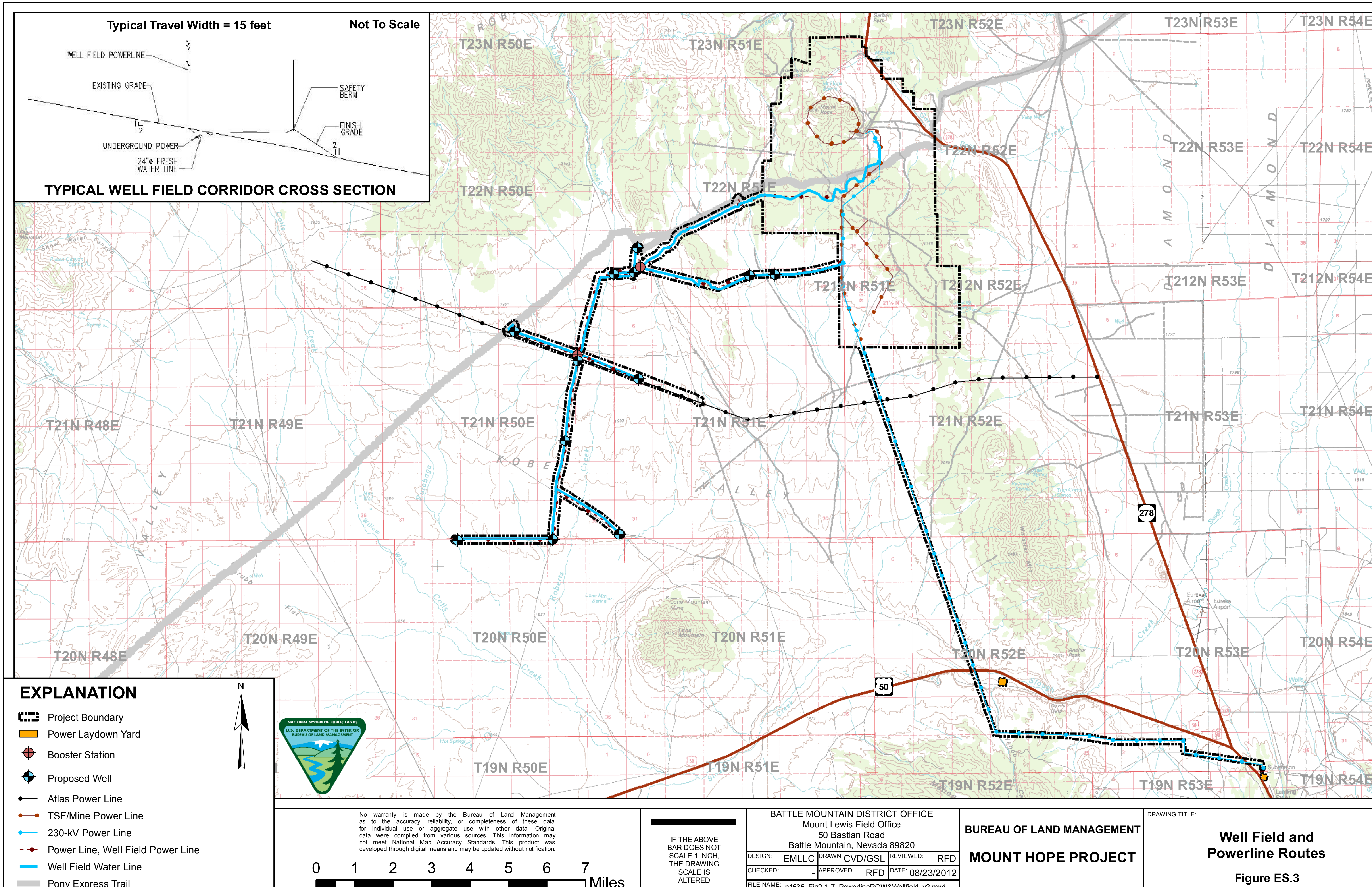
Project Area and Land Ownership

Figure ES.2



Typical Travel Width = 15 feet
Not To Scale
WELL FIELD POWERLINE
EXISTING GRADE
SAFETY BERM
FINISH GRADE
UNDERGROUND POWER
24"ϕ FRESH WATER LINE
TYPICAL WELL FIELD CORRIDOR CROSS SECTION
T23N R50E
T23N R51E
T23N R52E
T23N R53E
T23N R54E
T22N R50E
T22N R51E
T22N R52E
T22N R53E
T22N R54E
T212N R51E
T212N R52E
T212N R53E
T212N R54E
T21N R48E
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278
50
EXPLANATION
Project Boundary
Power Laydown Yard
Booster Station
Proposed Well
Atlas Power Line
TSF/Mine Power Line
230-kV Power Line
Power Line, Well Field Power Line
Well Field Water Line
Pony Express Trail
N
0 1 2 3 4 5 6 7 Miles
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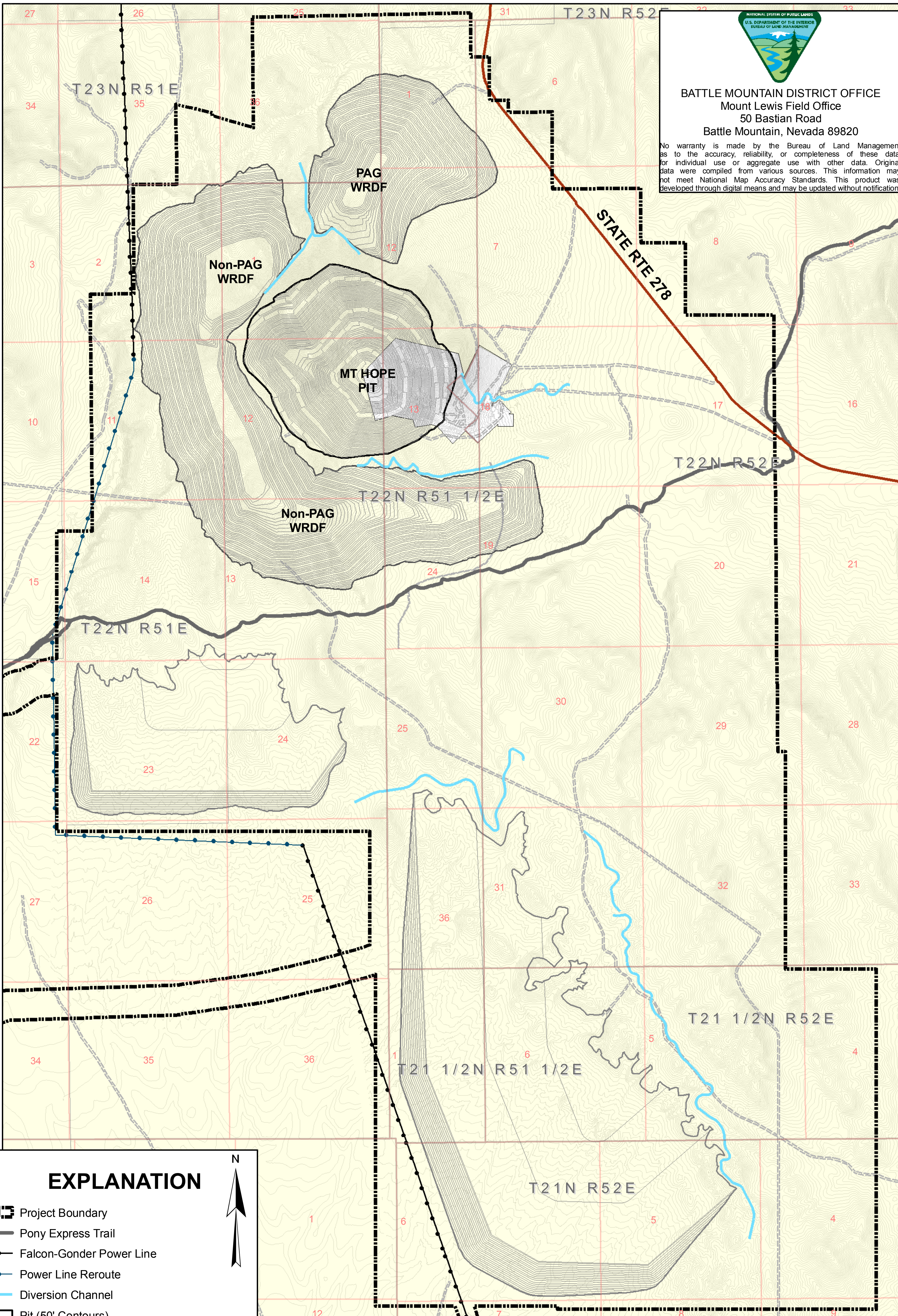
BUREAU OF LAND MANAGEMENT
MOUNT HOPE PROJECT
DRAWING TITLE:
Well Field and Powerline Routes
Figure ES.3



EXPLANATION

N

- Project Boundary
- Pony Express Trail
- Falcon-Gonder Power Line
- Power Line Reroute
- Diversion Channel
- Pit (50' Contours)
- Waste Rock Disposal Facilities (20' Contours)
- Tailing Storage Facilities (20' Contours)

Land Status

- Bureau of Land Management
- Private

0 0.5 1 Miles

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BUREAU OF LAND MANAGEMENT

MOUNT HOPE PROJECT

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Post MiningTopography (Year 80 and Beyond)

Figure ES.4

Table ES-1: Summary of Potential Environmental Effects, Mitigation Measures, and Residual Impacts

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1 INTRODUCTION: PURPOSE OF AND NEED FOR ACTION

1.1 Introduction and Location

Eureka Moly, LLC (EML) plans to develop the Mount Hope Project (Project) in central Nevada approximately 23 miles northwest of Eureka, Nevada, as shown in Figure 1.1.1. The Project would be located on public land administered by the Bureau of Land Management (BLM) and on private land controlled by EML (Figure 1.1.2). The specifics of the Project are outlined in the Project Plan of Operations (NVN-082096) (Plan) submitted in June 2006, and most recently revised in July 2011, which is on file and available for review at the BLM Mount Lewis Field Office (MLFO) in Battle Mountain, Nevada, during normal business hours (Monday through Friday, excluding holidays, from 7:30 a.m. to 4:30 p.m.). In addition, EML has submitted to the MLFO a right-of-way (ROW) Application and associated Plan of Development (POD) for portions of the planned Project activities. The ROW Application and POD (NVN-084632) were submitted in January 2008 for the 230-kilovolt (kV) transmission line from the Machacek Substation to the Project Substation located near the proposed mill. The ROW Application and POD are on file and available for review at the BLM MLFO in Battle Mountain during normal business hours. **There would be two ROWs associated with the powerline. The first is a short-term ROW (NVN-091272) associated with powerline construction. The second ROW is a long-term ROW (NVN-084632) for operation of the powerline. The boundary of the long-term ROW is within the boundary of the short-term ROW.** There would **also** be a ROW Application associated with the reroute of the 345-kV Falcon-Gondor transmission line. This ROW Application would modify the existing ROW (NVN-063162), which would be filed at the time the modified ROW is needed for the reroute in approximately Year 36. The 80-year Project would have an 18- **to 24-**month construction phase, 44 years of mining and ore processing, 30 years of reclamation, and five years of post-closure monitoring. The years of operation presented in this Environmental Impact Statement (EIS) are anticipated or nominal, and there is a potential the timing on the implementation or duration of components of the Project could vary.

The Project is located in all or parts of Mount Diablo Base and Meridian (MDBM), Township 20 North, Range 50 East, Sections 2-5, (T20N, R50E, Secs. 2-5); T20N, R52E, Secs. 5, 8, 9, 16, 21, 26-28, 34-36; T20N, R53E, Secs. 31-35; T21N, R50E, Secs. 1-3, 11-14, 23, 25, 26, 32-36; T21N, R51E, Secs. 1, 7, 8, 12, 16-18, 3**1**; T21N, R52E, Secs. 4-9, 18-20, 29, 32; T21½N, R51½E, All; T21½N, R52E, Secs. **4-6**; T22N, R50E, Secs. **25**, 36; T22N, R51E, Secs. 1, 2, 11-15, 20-**26, 28-**36; T22N, R51½E, All; T22N, R52E, Secs. 6-8, 17-20, 29-32; T23N, R51E, Secs. **25,** 35, 36 (Project Area). The Project Area, which covers **22,886** acres, includes the Mine Facility Area, ROW, and the well field development area (Figure 1.1.2). EML's holdings include 14 patented claims (approximately 260 acres of private land) and approximately 1,550 lode and millsite mining claims for a total land position of approximately 29,000 acres.

The Project Area can be reached by traveling on State Route (SR) 278 approximately 23 miles northwest of the Town of Eureka, Nevada. Alternatively, the Project Area can be reached by traveling south approximately 65 miles on SR 278 from Carlin, Nevada.

The proposed mining activities, which would be located on public lands, would be subject to BLM review and approval pursuant to the Federal Land Policy and Management Act (FLPMA) and subsequent surface management regulations (43 Code of Federal Regulations [CFR], Subpart 3809), as well as ROW principles and procedures (43 CFR, Subpart 2800). These activities constitute a federal action and would thus be subject to the National Environmental Policy Act (NEPA). The BLM has determined that the Project constitutes a major federal action and has determined that an EIS must be prepared to fulfill NEPA requirements. In determining the scope of the Proposed Action, the BLM has determined that actions on private lands are connected actions with those proposed on public lands (40 CFR 1502.4 (2) and 40 CFR 1508.25(a)). This EIS will also analyze impacts from private land activities.

This **Final** EIS has been prepared by the BLM, the Lead Agency with respect to compliance with the NEPA and its implementing regulations, and with the following cooperating agencies: Nevada Department of Wildlife (NDOW), Eureka County, and the National Park Service (NPS). The purpose of this document is to analyze the environmental effects of the Proposed Action, associated with the proposal by EML to develop the Mount Hope open pit mine, as well as alternatives to the Proposed Action.

The purposes of an EIS are as follows: a) to analyze potential impacts from the Project based on the Proposed Action; b) to identify reasonable alternatives; c) to inform the public about the Project; d) to solicit public comment on the Project and alternatives; and e) to provide agency decision makers with adequate information upon which to base the decision to approve or deny the Project or an alternative development scenario.

The EIS is prepared in compliance with the NEPA and in accordance with BLM's NEPA Handbook H-1790-1 (BLM 2008a), BLM Nevada State Office (NSO) Instruction Memorandum (IM) NV-90-435, and Council on Environmental Quality (CEQ) regulations on the analysis of cumulative impacts (40 CFR 1500). The EIS considers the quality of the natural environment based on the physical impacts to public and private lands that may result from implementation of the Proposed Action. All baseline data reports used in the preparation of the EIS are on file at the BLM MLFO.

All the spatial data presented in the figures and tables of this EIS are based on North American Datum (NAD) 83 georeferencing.

1.2 Project Background and History of Mining

Historical mining occurred within the Project Area from the 1870s through the 1940s. Exxon Minerals Corporation conducted exploration activities in the late 1970s through the early 1980s. Currently, EML is conducting exploration operations within the Project Area.

Disturbances associated with historic mining operations are located primarily on private land (patented claims). These disturbances consist of a core shed and storage building surrounded by a fence, underground mining operations, **waste rock disposal facilities (**WRDFs**)**, and mill tailings. Some relatively small waste rock piles remain on the property, as well as three adits. One of these adits drains to a small man-made stock pond. Numerous historic mine workings are located throughout the Project Area, including unsecured and abandoned shafts, adits, open stopes, drifts, and prospects. The Project Area includes three historic mill tailings impoundments and one overflow tailings containment impoundment, all of which were associated with the ore concentrating activities conducted at the mine site during the 1940s. The three tailings impoundments contain approximately 25,000 cubic yards (yd^3) of spent tails. The largest of the three tailings impoundments, measuring approximately 300 feet wide by 550 feet long, contains

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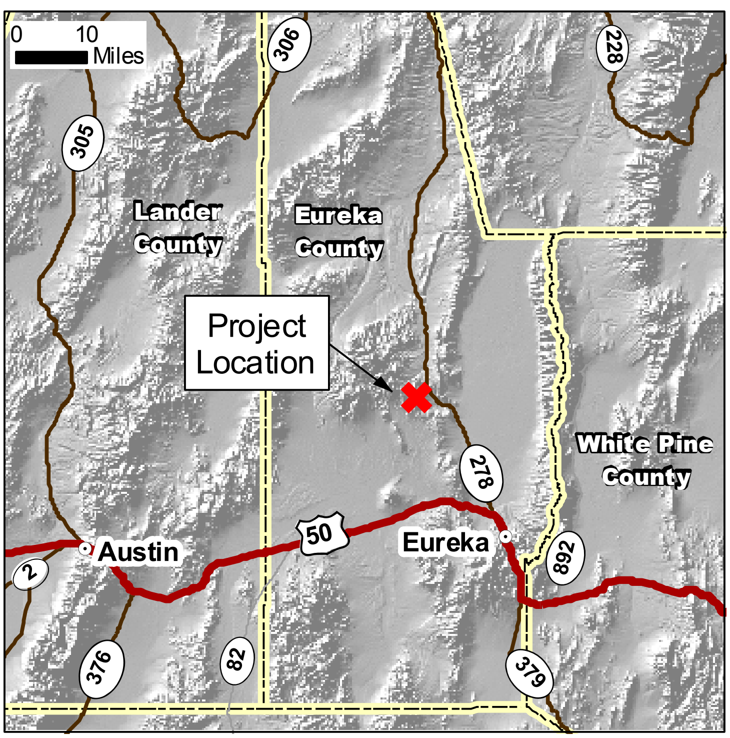

EXPLANATION

- City
- Freeway
- Highway
- Major Road
- County Boundary

N

0 20 40 60 80 100
Miles

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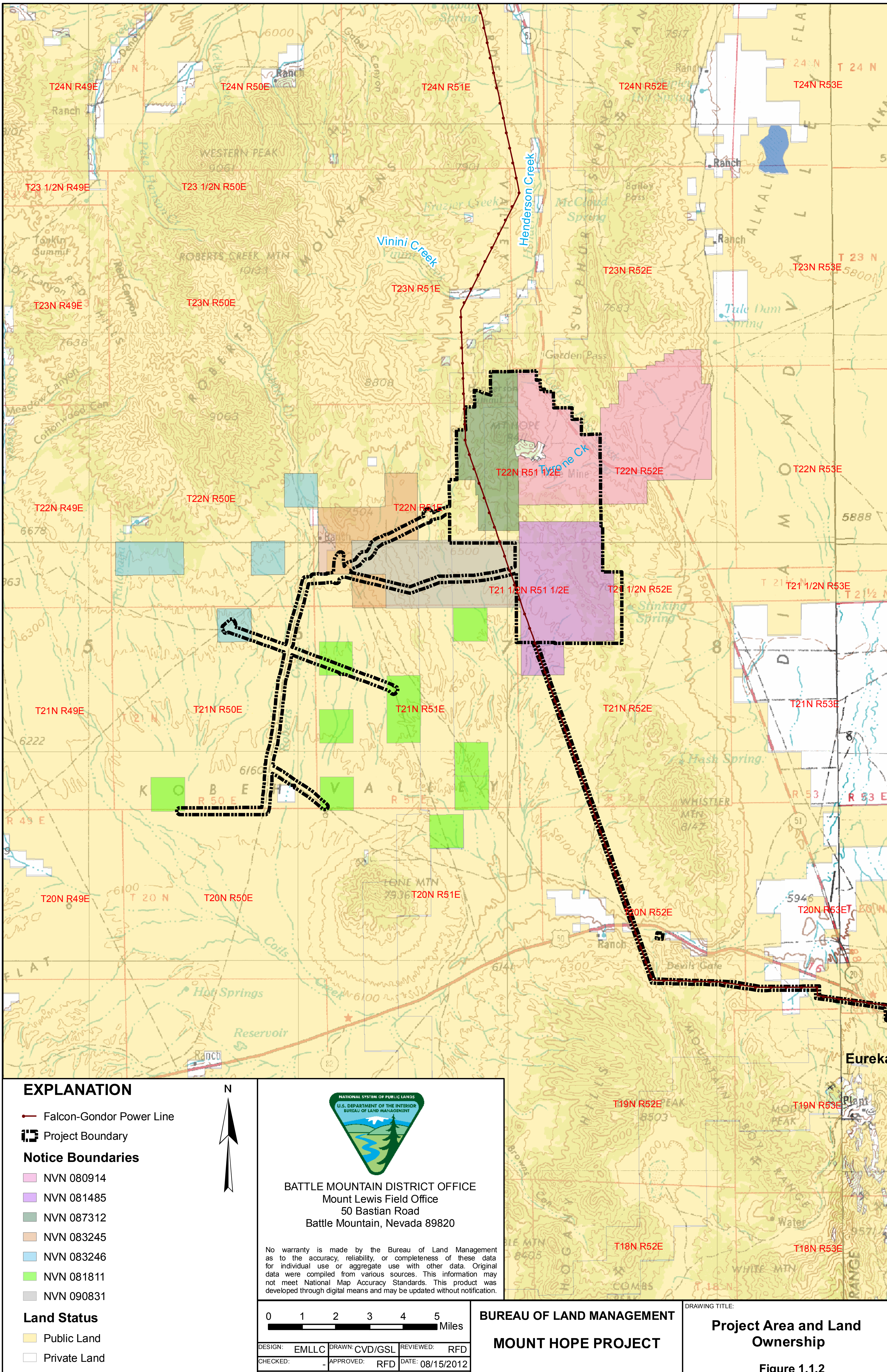
BUREAU OF LAND MANAGEMENT

MOUNT HOPE PROJECT

General Location Map

Figure 1.1.1


T24N R49E
T24N R50E
T24N R51E
T24N R52E
T24N R53E
T23 1/2N R49E
T23 1/2N R50E
Vinini Creek
Henderson Creek
T23N R49E
T23N R50E
T23N R51E
T23N R52E
T23N R53E
T22N R49E
T22N R50E
T22N R51E
T22N R51 1/2E
Tyrone Ck
T22N R52E
T22N R53E
T21 1/2N R51 1/2E
T21 1/2N R52E
T21 1/2N R53E
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Eureka
T19N R52E
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T18N R53E
EXPLANATION
N
Falcon-Gondor Power Line
Project Boundary
Notice Boundaries
NVN 080914
NVN 081485
NVN 087312
NVN 083245
NVN 083246
NVN 081811
NVN 090831
Land Status
Public Land
Private Land
Water
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REVIEWED: RFD
CHECKED: -
APPROVED: RFD
DATE: 08/15/2012
FILE NAME: p1635_Fig1-1-2_ProjectArea&LandOwnership_v3.mxd
BUREAU OF LAND MANAGEMENT
MOUNT HOPE PROJECT
DRAWING TITLE:
Project Area and Land Ownership
Figure 1.1.2

no vegetative cover. Scattered vegetation, consisting primarily of sagebrush, is present on the remaining two tailings impoundments, which measure approximately 250 feet by 175 feet and 400 feet by 150 feet.

All three tailings impoundments range in depth from less than three feet to approximately 16 feet. The overflow tailings containment impoundment measures approximately seven feet by 16 feet and is located southwest of the former mill. This impoundment was utilized to contain any spills from the mill and is currently estimated to contain approximately two yd^3 of material. The center of the impoundment is void of vegetation; however, the edges of the impoundment contain sparse vegetation. The tailings were characterized in 1995 (Westec 1995) using the Meteoric Water Mobility Procedure (MWMP) to determine whether or not the contained constituents were mobile. The preliminary investigation indicated that the tailings material did not have the potential to degrade the waters of the State of Nevada.

1.3 Existing Activities and Facilities

EML is presently conducting activities under Notices within the Project Area. These activities include condemnation drilling (i.e., drilling to confirm that no valuable minerals occur in the area drilled), installation of water quality monitoring wells to determine hydrogeochemical properties for studies used in the development of the Plan, and collection of information on geotechnical conditions underneath the proposed waste rock storage areas and tailings impoundments. EML also has Notices outside the Project boundary that are associated with water supply exploration activities. All Notices within and outside the Project Area are shown on Figure 1.1.2 and in Table 1.3-1. Notice NVN-087312 is located completely within the Plan boundary and would be retired upon Plan approval. All other Notices would remain open, although the disturbance associated with these individual Notices would be decreased due to a portion of them being subsumed by the Plan. These Notices are presently active and may be used to conduct additional exploration between the present time and the acceptance of the Plan. The remaining disturbance associated with Notices partially subsumed by the Plan would be determined and provided by EML as modification to the respective Notices once the Plan is approved. The disturbance associated with these Notices that remains within the Plan boundary would be bonded within the 50 acres of exploration disturbance provided.

Table 1.3-1: Legal Description of Notices Held by EML

Serial Number	Surface Disturbance (acres)*	Township, Range
NVN-080914	5	22N, 51E; 22N, 52E
NVN-081485	5	21N, 52E
NVN-081811	5	20N, 51E
NVN-087312	5	22N, 51E; 22N, 52E
NVN-083245	5	22N, 51E
NVN-083246	5	21N, 50E; 22N, 50E
NVN-090831	**5**	**22N, 51E; 21.5N, 51E**

*A conservative estimate of five acres per Notice is assumed.

EML controls the private land associated with previous mining activities. Cultural resource surveys of the Project Area were conducted during 2006, 2007, and 2008 to identify features that may be eligible for the National Register of Historic Places (NRHP) (Malinky 2006; Malinky 2008; Malinky et al. 2008).

1.4 Purpose of and Need for the Action

The BLM is responsible for administering mineral rights access on certain federal lands as authorized by the General Mining Law of 1872. Under the law, qualified prospectors are entitled to reasonable access to mineral deposits on public domain lands, which have not been withdrawn from mineral entry.

Under the FLPMA, the BLM is authorized to issue ROWs on public lands. Under this law, and the implementing regulations at 43 CFR 2800, qualified individuals can obtain ROWs on public lands.

The purpose of the Project is to profitably extract molybdenite from public lands where EML holds mining claims and private land to the optimal extent possible**. The Project need is to meet the prevailing market demand for molybdenum (Mo). The prevailing market demand is regularly adjusted at market exchanges throughout the world. This adjustment results from buyers and sellers agreeing on a specific transaction price, which reflects the current supply and demand for the commodity and other factors.**

The purpose and need for the federal action is multifold. One aspect of the purpose and need is established by the BLM's responsibilities under the FLPMA to respond to a request for a Plan of Operations for the applicant to exercise their rights under the General Mining Law, and an application for a ROW under FLPMA. Other aspects of the purpose and need of the federal action are: (1) to further the "Minerals" objective of the applicable resource management plan, which is to "[m]ake available and encourage development of mineral resources to meet national, regional, and local needs consistent with national objectives for an adequate supply of minerals"; and (2) to provide for mining and reclamation of the Project Area in a manner that is environmentally responsible and in compliance with federal mining laws, the FLPMA, Nevada Mine Reclamation Law, and other applicable laws and regulations.

1.5 BLM Responsibilities and Relationship to Planning

The BLM has the responsibility and authority to manage the surface and subsurface resources on public lands located within the jurisdiction of the MLFO. The public lands within the Project Area are designated as open for mineral exploration and development. This **Final** EIS was prepared in conformance with the policy guidance provided in BLM's NEPA Handbook (BLM Handbook H-1790-1) (BLM 2008a). The BLM Handbook provides instructions for compliance with the CEQ regulations (40 CFR 1500) for implementing the procedural provisions of the NEPA and United States (U.S.) Department of the Interior's (USDOI's) manual on NEPA (516 DM 1-7).

1.5.1 Resource Management Plan

The Proposed Action conforms with the BLM's Shoshone-Eureka Resource Management Plan (RMP), as amended, dated March 1986 (BLM 1986a). Specifically, on page 29 in the RMP Record of Decision (ROD), under the heading "Minerals" subtitled "Objectives" number 1:

> "Make available and encourage development of mineral resources to meet national, regional, and local needs consistent with national objectives for an adequate supply of minerals."

Under "Management Decisions," "Locatable Materials," page 29, number 1:

> "All public lands in the planning areas will be open for mining and prospecting unless withdrawn or restricted from mineral entry."

Under "Management Decisions," number 5, Current Mineral Production Areas:

> "Recognize these areas as having a highest and best use for mineral production and encourage mining with minimum environmental disturbance..."

1.5.2 Surface Management Authorizations and Relevant Plans

BLM regulations for surface management of public lands mined under the General Mining Law of 1872, as amended (43 CFR 3809) recognize the statutory right of mineral claim holders, such as EML, to explore for and develop federal mineral resources and encourage such development. These federal regulations require the BLM to review proposed operations to ensure that the following items are included: a) adequate provisions to prevent unnecessary or undue degradation of public lands; b) measures to provide for reclamation; and c) operations comply with other applicable federal, state, and local laws and regulations. EML submitted a Plan for the Project to the BLM in June 2006, revised September 2006, June 2007, May 2008, June 2008, July 2008, January 2009, October 2009, January 2010, July 2010, January 2011, July 2011**, and July 2012** (EML 2006) as required under the regulations. The EML Plan is on file and available for review during normal business hours at the BLM's MLFO.

The General Mining Law of 1872 allows individuals to locate and patent mining claims, such as lode claims. Since 1994, Congress has maintained a moratorium on BLM processing of mineral patent applications. Under the mill site provision, 30 U.S. Code (U.S.C.) 42, no location of a claim on nonmineral lands, called mill sites, may exceed five acres each. Under 43 CFR Sec. 3832.32, the maximum size of an individual mill site is five acres; however, more than one mill site per mining claim can be located if each site is used for at least one of the purposes described in 43 CFR Sec. 3832.34. The amount of located mill site acreage is that which is reasonably required for use or to be occupied for efficient and reasonably compact mining or milling operations.

The FLPMA **[43 U.S.C. 1761]** allows individuals to use public lands for powerlines, as well as other linear features (roads, pipeline, etc.), through the issuance of a ROW by the BLM.

1.5.3 Site Reclamation Requirements

The Mining and Mineral Policy Act of 1970 (MMPA) mandates federal agencies to ensure that closure and reclamation of mine operations are completed in an environmentally responsible manner. The MMPA states that the federal government should promote the following:

> "...development of methods for the disposal, control, and reclamation of mineral waste products, and the reclamation of mined lands, so as to lessen any adverse impact of mineral extraction and processing upon the physical environment that may result from mining or mineral activities."

The BLM's long-term reclamation goals are to shape, stabilize, revegetate, or otherwise treat disturbed areas in order to provide a self sustaining, safe, and stable condition providing productive use of the land, which conforms to the approved land use plan for the area. The BLM's long-term goals also include management of any discharges from process components. The short-term reclamation goals are to stabilize disturbed areas and to protect both disturbed and adjacent undisturbed areas from unnecessary or undue degradation. Relevant BLM policy and standards for reclamation are set forth in the BLM Solid Minerals Reclamation Handbook (BLM Manual Handbook H-3042-1), which provides consistent reclamation guidelines for all solid non-coal mineral activities conducted under the authority of the BLM Minerals Regulations in Title 43 CFR 3809 (BLM 1992). The BLM has reviewed the site reclamation portions of the Plan to ensure that the Project would meet BLM reclamation standards and goals. The Project would also be required to obtain a reclamation permit from, and meet the reclamation standards of, the State of Nevada Department of Conservation and Natural Resources, Nevada Division of Environmental Protection (NDEP), Bureau of Mining Regulation and Reclamation (BMRR).

1.5.4 Local Land Use Planning and Policy

The Eureka County 1973 Master Plan, updated in 2000 and again in 2010, contains a description of land uses, restrictions on development, and recommendations for future land use planning. The Eureka County Master Plan 2010 included an Economic Development Element which incorporated recommendations for increased land use planning that expands and diversifies the County's economy. The Natural Resources and Federal or State Land Use Element was developed and included into the **Master** Plan in response to Nevada Senate Bill **(SB)** 40, which was passed in 1983, which directs counties to develop plans and strategies for resources that occur within lands managed by federal and state agencies. Policies within the Eureka County Master Plan promote the expansion of mining operations/areas. **Some elements of the Proposed Action would be in conformance with Eureka County plans and policies while other elements of the proposed mine could prove inconsistent with these plans and policies. Appendix A outlines these inconsistencies between the Project and the Eureka County Master Plan. The BLM acknowledges that EML would have to comply with any applicable Eureka County codes.**

The Natural Resources and Federal or State Land Use Element is an executable policy for natural resource management and land use on federal and state administered lands in Eureka County. This element is designed to accomplish the following: 1) protect the human and natural environment of Eureka County; 2) facilitate federal agency efforts to resolve inconsistencies between federal land use decisions and County policy; 3) enable federal and state agency officials to coordinate their efforts with Eureka County; and 4) provide strategies, procedures, and policies for progressive land and resource management (Eureka County 2010).

1.6 Authorizing Actions

Scoping process information and subsequent discussions with various agencies have identified certain authorizing actions as required, or potentially required, prior to construction or operation of the Project. A list of these authorizing actions organized by agency is provided in Table 1.6-1.

Table 1.6-1: Summary of Environmental Permits and Approvals Required for the Project

Permit/Approval	Granting Agency	Permit Number	Date Issued	Status
Plan of Operations	USDOI, BLM	**n/a**	**n/a**	**Revised Plan of Operations submitted July 2012.**
Reclamation Bond Determination	USDOI, BLM and Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Mining Regulation and Reclamation	**n/a**	**n/a**	**Revised Reclamation Plan, reclamation cost estimate, and permit application submitted July 2012.**
Right-of-Way	USDOI, BLM	**n/a**	**n/a**	**Revised Plan of Development and application for ROW grant submitted July 2012.**
Utility Environmental Protection Act Permit	Nevada Public Utilities Commission	**n/a**	**n/a**	**Application submitted to Nevada Public Utilities Commission in February 2008 and assigned Docket # 08-01016).**
Permit to Operate (Air Quality)	Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Air Pollution Control	**AP 1061-2469**	**May 29, 2012**	**n/a**

Permit/Approval	Granting Agency	Permit Number	Date Issued	Status
Water Pollution Control Permit	Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Mining Regulation and Reclamation	**NEV 2008106**	**n/a**	**Draft permit released for internal review in June 2012.**
Permit for Reclamation	Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Mining Regulation and Reclamation	**n/a**	**n/a**	**Revised Reclamation Plan, reclamation cost estimate, and permit application submitted July 2012.**
Permit to Appropriate Water	Nevada Department of Conservation and Natural Resources, Division of Water Resources	**Numerous permit numbers**	**Nevada State Engineer Ruling #6127 issued June 15, 2011.**	**n/a**
Industrial Artificial Pond Permits	Nevada Department of Wildlife	**n/a**	**n/a**	**Need for permit pending a NDOW determination of the potential for tailings water to be toxic to wildlife.**
Solid Waste Class III Landfill Waiver	Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Waste Management	**n/a**	**n/a**	**Application submitted in August 2012.**
Septic Treatment Permit	Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Water Pollution Control	**n/a**	**n/a**	**Application would be developed as infrastructure design is finalized and issuance of ROD allows site disturbance to conduct percolation tests.**
Drinking Water Supply	Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Safe Drinking Water	**n/a**	**n/a**	**Application to be submitted upon completion of potable water system design in late 2012.**

Permit/Approval	Granting Agency	Permit Number	Date Issued	Status
General Discharge Permit (Storm Water)	Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Water Pollution Control	**n/a**	**n/a**	**An extension of the previous approval of the jurisdictional survey conducted in 2007 would negate the need for this permit due to the absence of Waters of the U.S.**
Powerline Rerouting (Right-of-Way Amendment)	USDOI, BLM	**n/a**	**n/a**	**This permit would not be necessary until Year 34 of the Project.**
Explosive Permit	Bureau of Alcohol, Tobacco, Firearms, Explosives	**n/a**	**n/a**	**Permit application was submitted in June 2012.**
Hazardous Materials Storage Permit	State of Nevada, Fire Marshal Division	**n/a**	**n/a**	**Permit application would be developed after details of material storage are finalized, anticipated in late 2013.**
Hazardous Waste Identification Number	U.S. Environmental Protection Agency	**Generator ID # NVR000081349**	**July 18, 2006**	**n/a**
Encroachment Permit	Nevada Department of Transportation, District III	**n/a**	**n/a**	**Permit application to be developed after design of additional safety lanes is completed, anticipated to be in 2012.**
Liquefied Petroleum Gas License	Nevada Board of the Regulation of Liquefied Petroleum Gas	**n/a**	**n/a**	**Permit application would be developed after ROD issuance to allow site surface disturbance to complete compaction tests.**
Radioactive Material License[1]	Nevada Bureau of Health Protection Services	**n/a**	**n/a**	**Permit application would be developed after selection of specific sensors to be used in the process, anticipated to be in 2013.**
Permit to Construct Tailings Impoundments	Nevada Department of Conservation and Natural Resources, Division of Water Resources	**J-623 and J-653**	**October 25, 2010**	**n/a**

Permit/Approval	Granting Agency	Permit Number	Date Issued	Status
Permit to Operate	Nevada State Minerals Commission, Division of Minerals	**n/a**	**n/a**	**Registration is required within 30 days of the start of operations, after which the Permit to Operate would be issued.**

[1] A radioactive material license may be required if nuclear flow and mass measuring devices are used in the mill and ore reclaim tunnels.

1.7 Environmental Review Process

A Project Scoping Summary documents activities conducted during the scoping process. The summary addresses the issues and concerns identified by the public during the scoping process. The Scoping Summary outlines the key issues identified during scoping and that the BLM deems to be necessary for analysis in the EIS, as well as those concerns not considered critical effects of the Proposed Action. The Scoping Summary is on file and available for review during normal business hours at the BLM's MLFO.

A Notice of Intent (NOI) to prepare this EIS was published in the Federal Register (FR) on March 2, 2007. The NOI invited scoping comments to be sent to the BLM through April 6, 2007. Also on March 2, 2007, copies of a news release entitled "Notice of Intent to Prepare an Environmental Impact Statement to Analyze the Proposed Action for the Mount Hope Project" were submitted to three northern Nevada newspapers (Humboldt Sun in Winnemucca, Battle Mountain Bugle in Battle Mountain, and the Elko Daily Free Press in Elko, Nevada) and to major interest groups. Public scoping meetings for the Project were held on March 27, 2007, and March 28, 2007.

The meeting on March 27, 2007, was held in Eureka, Nevada, at the Eureka Opera House. A total of five members of the public attended this meeting, and no written comments were received.

The meeting on March 28, 2007, was held in Battle Mountain, Nevada, at the BLM MLFO. A total of 30 members of the public attended this meeting, and one written comment was provided.

Five additional comment letters were received via mail or email during the public scoping period, and three letters were received in July 2007 after the close of the scoping comment period.

Comment letters received during and after the public scoping period have been included in the Scoping Summary and follow-up summaries, which are on file and available for review during normal business hours at the BLM's MLFO. As a result of the public scoping process, the following potential issues of concern were identified by the public:

- <u>General Project Issues</u>
  Scope of project
  Length of project

Size of project
Reclamation requirements
Financial guarantees
Mitigation measures
Long range plans
Protection of resources
Sustainability
Alternatives to the Project
Operational performance standards
Waste management
Cumulative impacts
Loss of ecosystem
Change in local microclimate
Land restoration

- <u>Soils and Watershed Issues</u>
  Impacts from increased erosion
  Impacts to soils from a chemical release (surface or air)
  Impacts to the quality of soils for restoring wildlife habitat and values

- <u>Livestock Grazing and Production Issues</u>
  Impacts to access for permittees
  Impacts to forage levels
  Impacts to grazing allotments
  Impacts to utilization levels
  Impacts to animal unit months

- <u>Water Resource Issues</u>
  Impacts to regional hydrology
  Impacts to surface waters from toxic effluents and residues
  Impacts to ground water chemistry
  Impacts from acid generation
  Impacts to seeps and springs
  Impacts from ground water pumping
  Impacts to future pit water quality
  Impacts from infiltration activities
  Impacts to stream flows/surface flows
  Impacts to wetlands
  Impacts to aquifer level
  Impacts of water in the pit during mining operations
  Impacts to waters of the U.S.
  Impact of ground water recharge following mine closure
  Impacts from sediment loads to streams
  Water quantity
  Use of Water
  Co-mingling of aquifers
  Impacts of catastrophic event on surface waters and ground water
  Maintenance of water lines

Impacts to water rights
Impacts to water quality
Impacts from water discharge
Impacts from mine drainage
Impacts to drainage patterns
Impacts from erosion and sedimentation
Impacts from flash floods
Flood plain recognition
Impacts from surface water, rain, or snow melt percolating through mine facilities

- Air Resource Issues
  Impacts to air quality
  Impact of mercury and other hazardous air pollutants emissions

- Wildlife and Fisheries Resource Issues
  Impacts to threatened and endangered species
  Impacts to terrestrial and aquatic wildlife and habitats
  Impacts to wildlife from hazardous materials and toxic solutions
  Impacts to breeding, nesting, and cover habitats of wildlife
  Impacts to wildlife diversity
  Impacts to native flora
  Impact of tailings facility on wildlife resources
  Impacts of pit water quality on wildlife
  Impacts to wildlife from Project-generated noise
  Reclamation impacts to wildlife
  Impact to riparian areas
  Wildlife access to water
  Impacts to wildlife from mining operations
  Impacts to hunting and wildlife viewing opportunities
  Impacts to wildlife forage areas
  Impacts to wildlife migration routes
  Impacts to springs utilized by wildlife
  Impact to bats and bat habitat

- Wild Horse Issues
  Impacts to wild horses from mining operations
  Impacts to wild horse foraging
  Impacts to wild horse management and allowable management levels
  Impacts to wild horse habitat and available acreages
  Impacts due to vehicular collisions with wild horses
  Impacts to herd management areas
  Impacts to free roaming behavior
  Impacts to wild horses due to water right transfers
  Impacts to water sources that wild horses use

- Cultural Resources and Native American Traditional Value Issues
  Impacts on Native American cultural sites
  Impacts on historic sites

Impacts on pine nut harvesting areas
Impacts to Native American Traditional Values

- Geology Issues
  Impacts of seismic activity on Project components
  Characterization of waste rock

- Visual Resource Issues
  Impacts to visual resources
  Impacts from lighting
  Impacts from color of facilities
  Impacts to line and form
  Impacts to the Pony Express Historic Trail

- Auditory Resource Issues
  Impacts from Project-related noise

- Land Use, Access, and Public Safety Issues
  Impacts to public safety
  Impacts to local traffic
  Impacts to access for the public

- Recreation and Wilderness Issues
  Impacts to wilderness resources
  Impacts of potential use of pit lake as a recreation site
  Impacts to recreation and hunting

- Socioeconomic Values and Public Services Issues
  Impacts to public services and infrastructure
  Impacts on economics in Eureka County
  Impacts on economics in State of Nevada
  Impacts from employee housing
  Impacts to the Town of Eureka

- Hazardous Material Issues
  Impacts from releases of hazardous materials

- Environmental Justice Issues
  Impacts to minority and low income populations

All of the above identified issues or concerns have been outlined in the Scoping Summary or the **Final** EIS. The scoping comments were reviewed for relevance to the Proposed Action, and those which addressed potential impacts of the Proposed Action have been included in the **Final** EIS.

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2 DESCRIPTION OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 Proposed Action

The Proposed Action consists of **four** connected actions. The first action includes those activities proposed in the Plan. The remaining actions are associated with the **three** ROW Applications and PODs.

The following discussion of the Proposed Action is a summary of the Plan (EML 2006) and ROW Application and POD (EML 2008a). The Plan, ROW Application**,** and POD contain substantial supporting information and details that supplement this Proposed Action. As required under Section 3809.401 of 43 CFR Subpart 3809, this additional information includes the following operating plans:

- Waste Rock Management Plan (WRMP) (Rock Characterization and Handling Plan) located in Appendix 4 of the Plan;
- Spill Contingency Plan located in Appendix 11 of the Plan;
- Quality Assurance Plan located in Appendix 6 of the Plan;
- Monitoring Plan located in Appendix 12 of the Plan;
- Interim Management Plan located in Appendix 8 of the Plan; and
- Water Management Plan as discussed in Section 3.D.19 of the Plan.

Should the reader require details beyond that which is presented in the Proposed Action, the Plan, ROW Application, and the POD are available for review at the MLFO in Battle Mountain, Nevada, during normal business hours.

The Project is located on public land administered by the BLM and on private land controlled by EML. The 80-year Project would have an 18- **to 24-**month construction phase, 44 years of mining and ore processing, 30 years of reclamation, and five years of post-closure monitoring. Concurrent reclamation would not commence until after the first 15 years of the Project. The Mount Hope ore body contains approximately 966 million tons of molybdenite (molybdenum disulfide) ore that would produce approximately 1.1 billion pounds of recoverable Mo during the ore processing time frame. Approximately 1.7 billion tons of waste rock would be produced by the end of the 32-year mine life. Approximately 1.0 billion tons of tailings would be produced by the end of the 44 years of ore processing. Optimal development of the Mo deposit, to meet the market conditions and maximize Mo production, would utilize an open pit mining method and would process the mined ore using a flotation and roasting process. The location of the WRDFs, the tailings storage facilities (TSFs), and the mill and roasting facilities adjacent to the open pit would be the most efficient location to meet the needs of the Project.

The Project would consist of the following:

a) An open pit with a life of approximately 32 years and associated pit dewatering;

b) WRDFs where waste rock would be segregated according to its potential to generate acid rock drainage (ARD);

c) Milling facilities including a crusher, conveyors, semi-autogenous grinding (SAG) and ball mills, flotation circuits, concentrate dewatering, ferric chloride concentrate leach circuit, and filtration and drying circuits that would operate for approximately 44 years;

d) A molybdenite concentrate roaster and packaging plant to package the technical grade molybdenum oxide (TMO) in bags, cans or drums;

e) A ferromolybdenum (FeMo) plant for production of FeMo alloy using a metallothermic process and separate packaging plant for drums and bags;

f) Two tailings storage facilities (South TSF and North TSF) and associated tails delivery and water reclaim systems;

g) An ongoing exploration program utilizing drilling equipment, roads, pads, and sumps;

h) Low-Grade Ore (LGO) Stockpile that would feed the mill after mining ceases;

i) Water supply development with associated wells, water delivery pipelines, access roads, and power in the Kobeh Valley Well Field Area;

j) A**n approximately** 24-mile, 230-kV electric power supply line from the existing Machacek substation, with a substation and distribution system located in the Project Area;

k) A realigned section of the existing Falcon-Gondor powerline, which would require an amendment to the existing ROW at the time it is needed (near Year 36);

l) Ancillary facilities including haul, secondary, and exploration roads, a ready line (location of haulage equipment that is ready for use on a daily basis), warehouse and maintenance facilities, storm water diversions, sediment control basins, pipeline corridors, reagent and diesel storage, storage and laydown yards, ammonium nitrate silos, explosives magazines, fresh/fire suppression water storage and a process water storage pond, monitoring wells, an administration building, a security/first aid building, a helipad, a laboratory, growth media/cover stockpiles, borrow areas, mine power loop, communications equipment, hazardous waste management facilities, a Class III waivered landfill, and an area to store and treat petroleum contaminated soils;

m) Turn lane**(s)** on SR 278;

n) The option for the toll roasting of Mo from concentrate offsite; and

o) The closure of the TSF and the potentially acid generating (PAG) WRDF with the use of evapotranspiration **(ET)** cells to manage the long-term discharge from these facilities, as well as the physical reclamation of all Project components.

The surface disturbance associated with the proposed activities totals 8,3**55** acres and is outlined in Table 2.1-1.

Table 2.1-1: Proposed Action Surface Disturbance

Component	Public Acres	Private Acres	Total Acres
Open Pit	584	150	734
Waste Rock Disposal Facilities	2,246		2,246
Tailings Storage Facilities			3,276
North	879		
South	2,380		
Underdrain Ponds	17		
Low-grade Ore Stockpile[1]	384	33	417
Plant/Admin/Yards[2]	437	55	492
Power Supply Utility Corridor[3]	**122**	**2**	**124**
Access Road	9		9
Evapotranspiration (ET) Cells	38		38
Ancillary			1,019
Exploration	50		
Growth Media Stockpiles and Roads	488		
TSF Powerline Corridor	8		
Water Supply Development[4]	98		
Diversion Ditches[5]	113		
Interpit[6]	239	23	
Total	**8,092**	**263**	**8,355**

1 May be incorporated into the PAG WRDF, depending on economics.
2 Includes mill and maintenance buildings, crusher, conveyors, substations, vault, truck shop, warehouse, lab, roaster, yards, reclaim stockpile, laydown areas, fueling area, parking areas, fencing, and tailings and reclaim lines.
3 Includes 22 acres under the Plan and **100** acres under the POD, which includes **two** acre**s** of private land.
4 Includes wells, water pipelines, electrical power, corridors, and associated access roads.
5 Includes sediment control ponds around WRDFs and TSF diversion channels.
6 Surface area between the pit and the LGO stockpile and WRDFs.

A list of anticipated mobile equipment requirements for the proposed mining operation is provided in Table 2.1-2. Vehicles and equipment may be upgraded over time as newer or more efficient technologies become developed. Other support vehicles and equipment may be used. In addition, at various times during the mine life, contract mining may be used to supplement the proposed equipment fleet, in which case equipment could be significantly different in size or number than what is listed in Table 2.1-2.

2.1.1 Open Pit Mining Methods

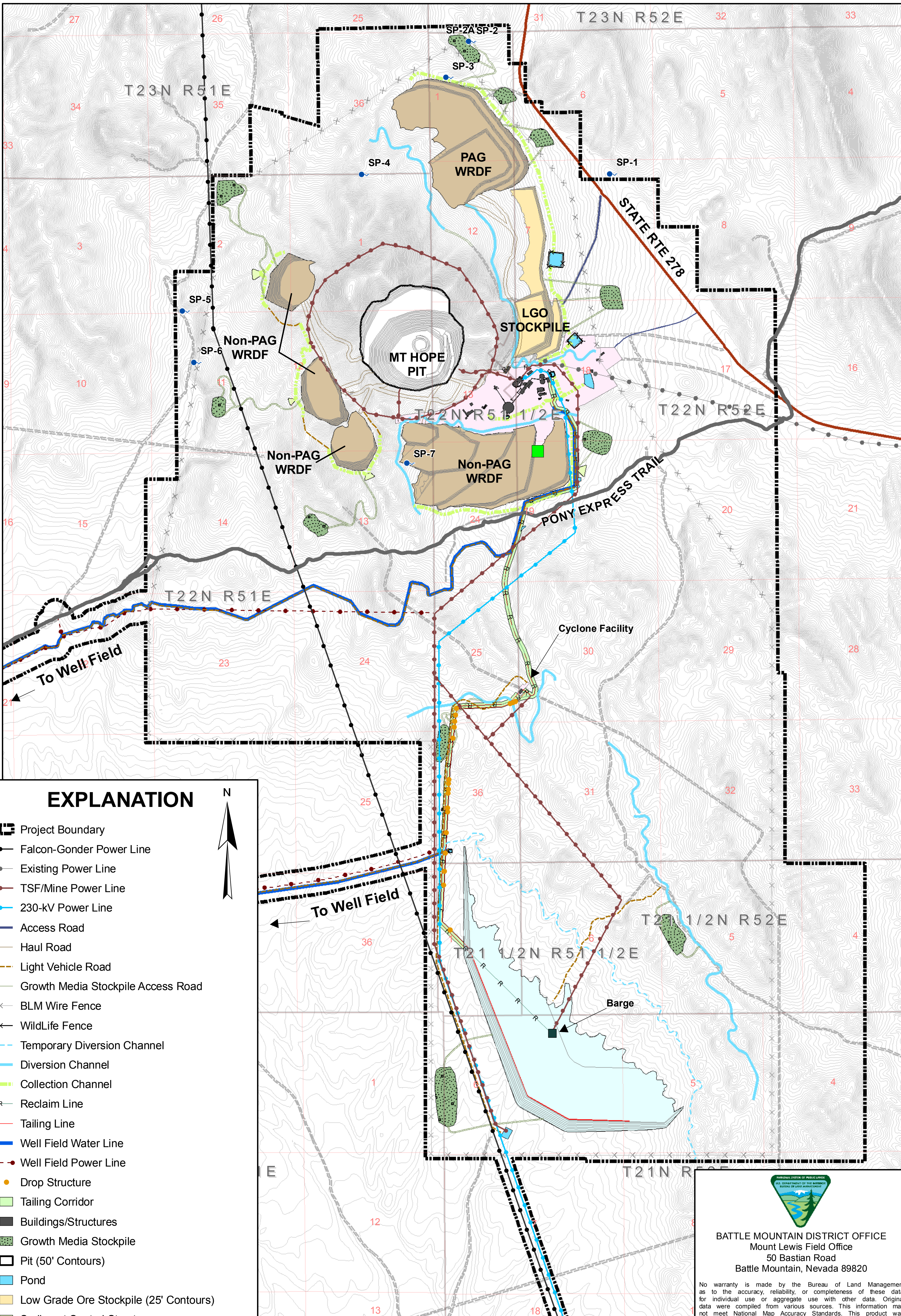
Approximately 2.7 billion tons of ore and waste rock would be excavated from the open pit and either placed in the WRDFs, sent to the mill, or stored in ore stockpiles for later processing at the mill. EML would operate the pit in a safe and practicable configuration that incorporates proper equipment operating room, working geometries, and access roads (Figures 2.1.1 and 2.1.3) to an ultimate open pit limit as shown on Figure 2.1.5. The mine plan employs a starter pit followed by a series of pushbacks which are lateral expansions of the pit by mining of the upper-most benches and then mining downward toward the pit floor. Multiple phases would be in operation at any point in time. Figures 2.1.1, 2.1.3, and 2.1.5 show the development of the open pit and associated facilities during early mining, middle of mining, and end of mining, respectively. Figures 2.1.2, 2.1.4, and 2.1.6 present open pit cross sections at each respective stage in the mine life. A single open pit would result from the phased mining. The ultimate pit depth would be approximately 2,600 feet below ground surface (bgs) at an elevation of approximately 4,700 feet above mean sea level (amsl). Pit backfill is not anticipated due to scheduling and resource evaluation; however, some in-pit waste rock disposal of non-acid generating material may be conducted. **This may be done as a temporary measure during development of the mine when mining and preparation of WRDFs are occurring simultaneously. At this time waste rock produced from the pit may be placed within the pit to allow continued pit development and later placement of this waste rock in the developed WRDF. Temporary placement of waste would not exceed 12 months. In addition, in-pit disposal may become economically preferable during the later stages of mine development when portions of the pit have been mined to the full design extent. Permanent placement of waste rock in the mined out areas would be limited to non-PAG waste rock.**

Table 2.1-2: Equipment Requirements for Project[1]

Unit	Peak Quantity During Production
Blasthole Drills	4
Shovels	4
Wheel Loaders	2
Haul Trucks	44
Wheel Dozers	3
Track Dozers	4
Track Excavator	1
Motor Graders	3
Water Trucks	3
Track Drill	1
Shovel Motivator	1

[1] The equipment types listed are general and intended only to provide an indication of the sizes and numbers that would be used; substitutions or additions may be made as necessary.

Conventional open pit mining (truck and shovel) would be used to extract ore and waste rock from the proposed open pit. Drilling and blasting would be used to break the rock so that it could be excavated. Blasting would utilize a mixture of ammonium nitrate and fuel oil (ANFO), although other explosives may be used during wet conditions. Blasting would be performed only during daylight hours and under strict safety procedures, as required by the Mine Safety and



EXPLANATION

N

- Project Boundary
- Falcon-Gonder Power Line
- Existing Power Line
- TSF/Mine Power Line
- 230-kV Power Line
- Access Road
- Haul Road
- Light Vehicle Road
- Growth Media Stockpile Access Road
- BLM Wire Fence
- WildLife Fence
- Temporary Diversion Channel
- Diversion Channel
- Collection Channel
- Reclaim Line
- Tailing Line
- Well Field Water Line
- Well Field Power Line
- Drop Structure
- Tailing Corridor
- Buildings/Structures
- Growth Media Stockpile
- Pit (50' Contours)
- Pond
- Low Grade Ore Stockpile (25' Contours)
- Sediment Control Structure
- Tailing Storage Facilities (20' Contours)
- Waste Rock Disposal Facilities (20' Contours)
- Yards
- Landfill Location
- Spring

0 2,000 4,000 6,000 Feet

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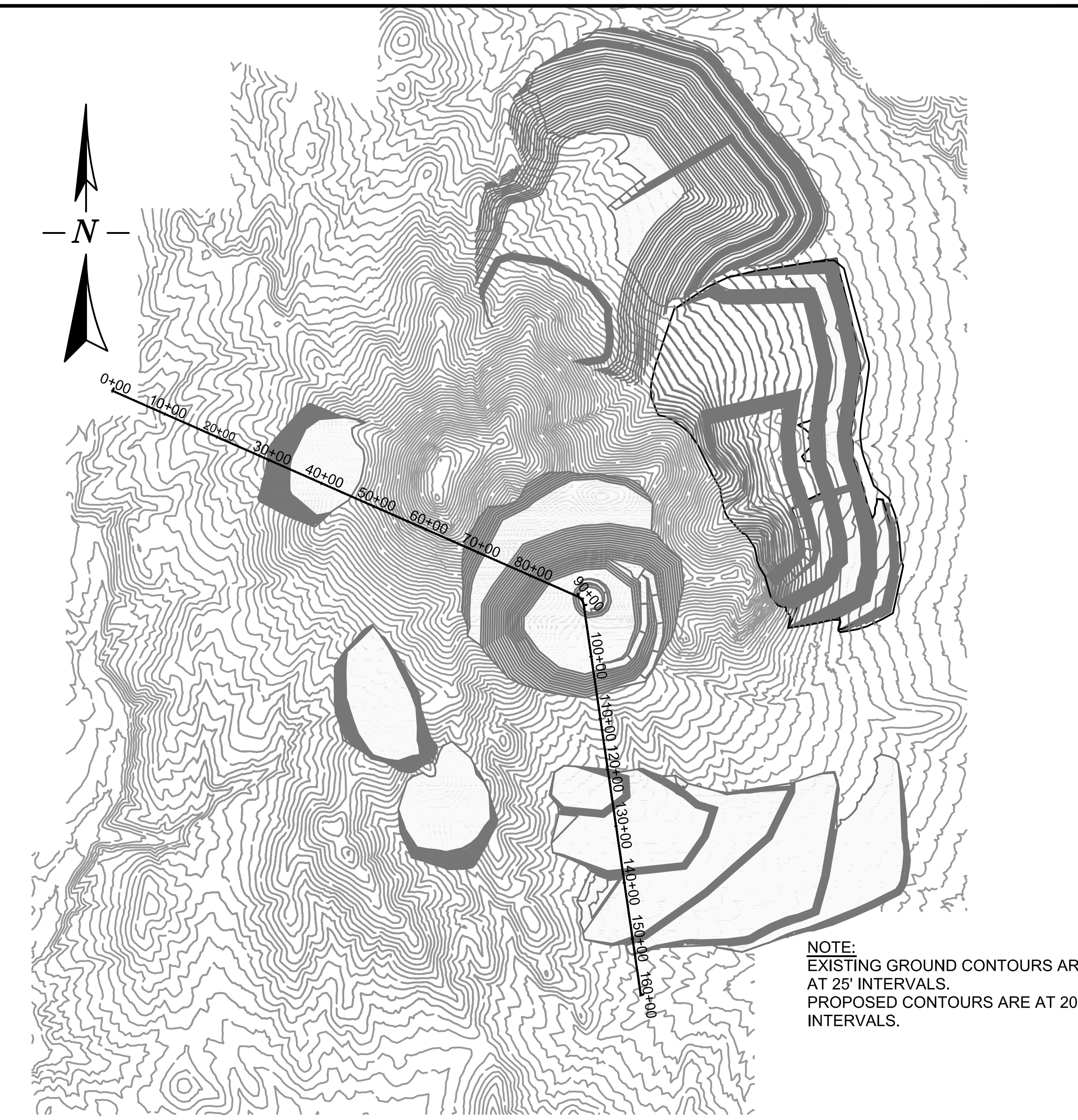
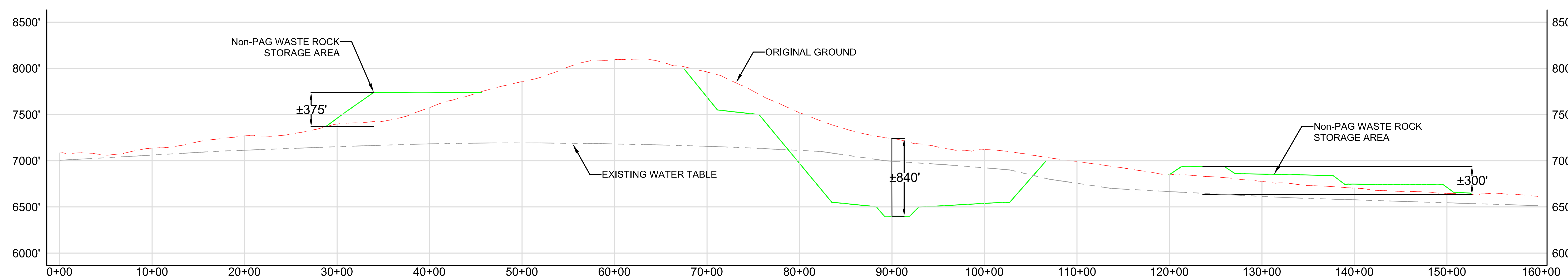
MOUNT HOPE PROJECT

DRAWING TITLE:

Early Project Life Plan View Open Pit and Facilities

Figure 2.1.1





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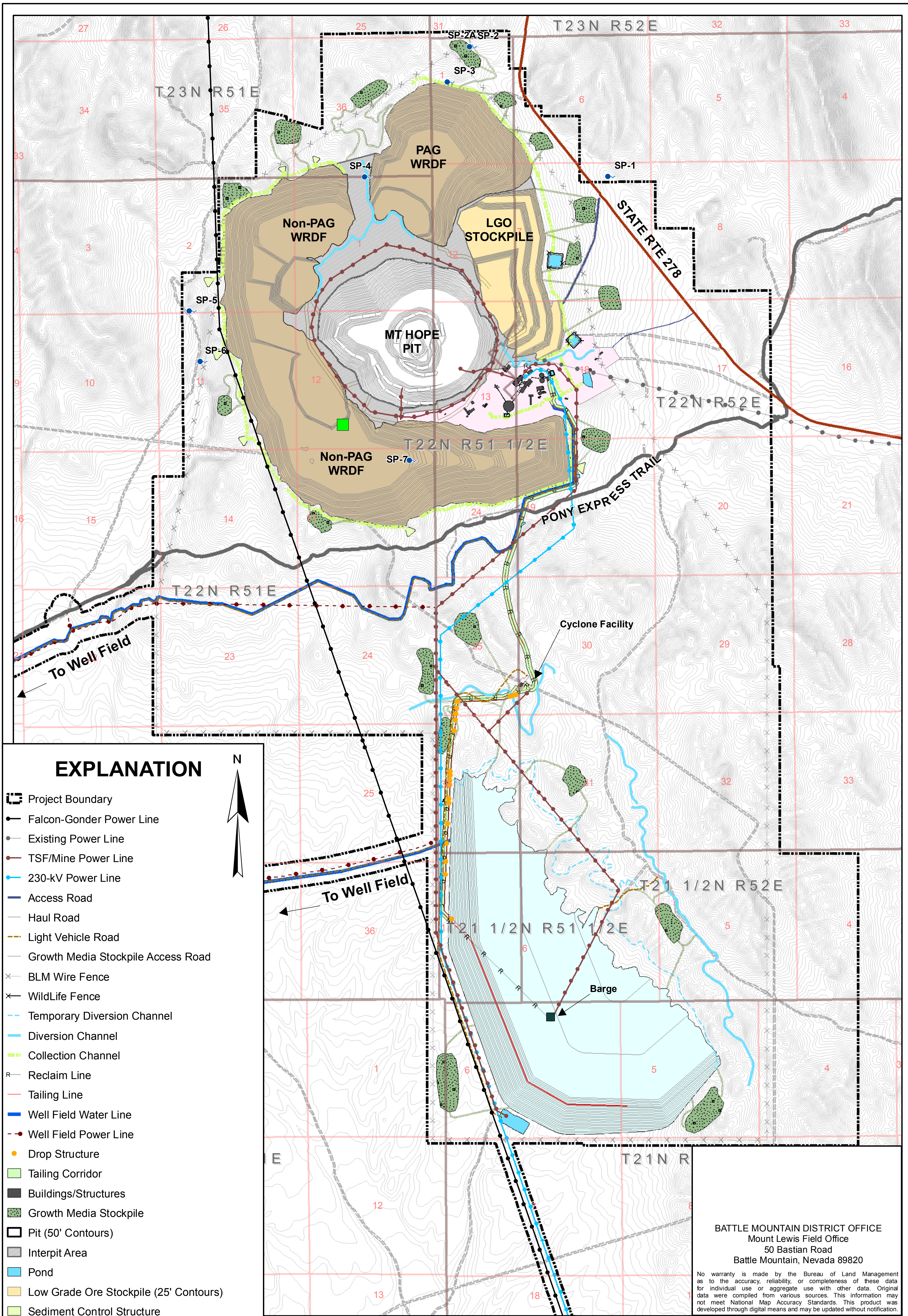
FILE NAME: p1635_Fig2-1-2&4&6_MineLifeCrossSections_v2.dwg

Early Project Life Cross Secton through Open Pit

Figure 2.1.2



0 2,000 4,000 6,000 Feet

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FILE NAME: p1635_Fig2-1-3_MidLifePlanView_v3.mxd

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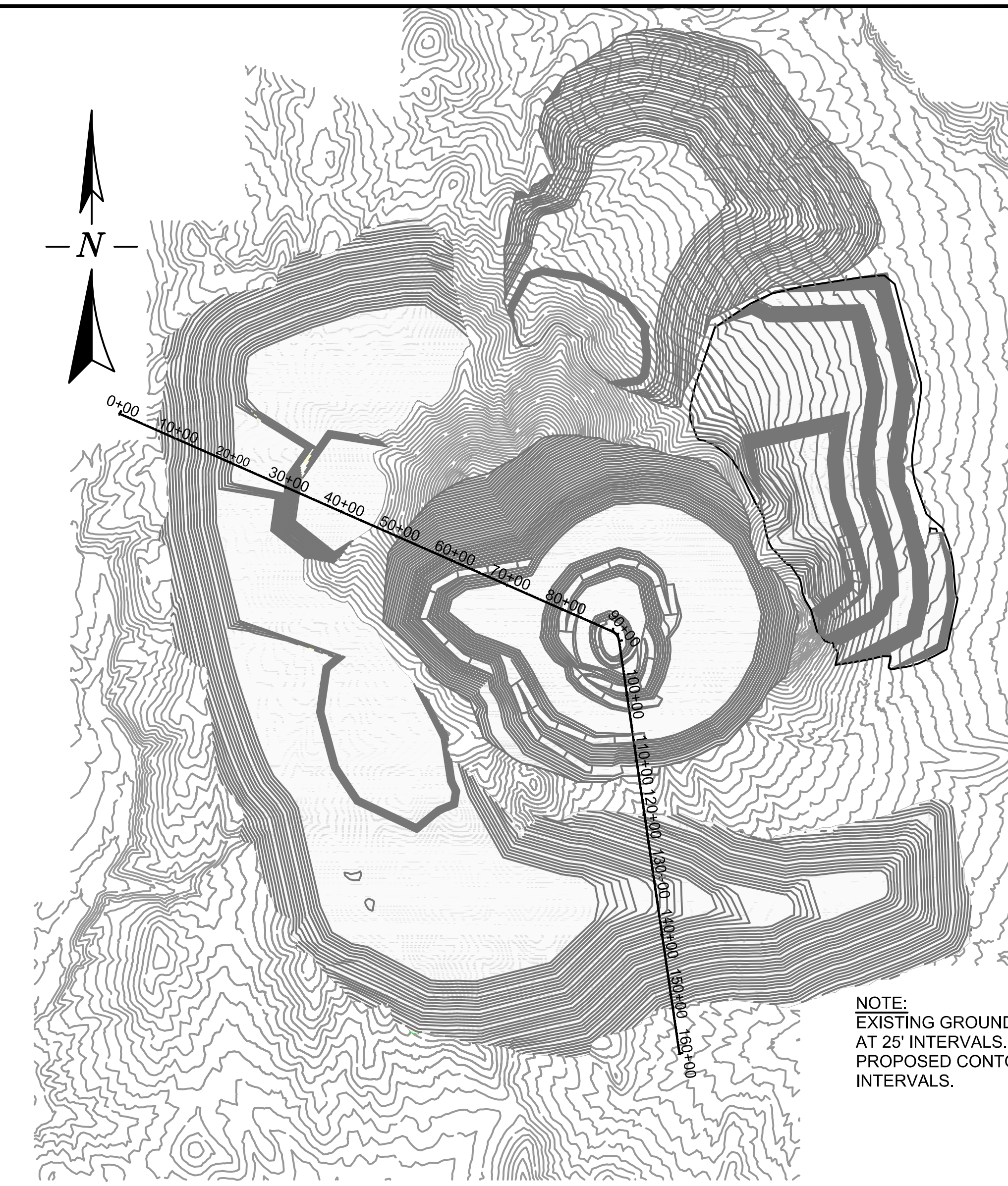
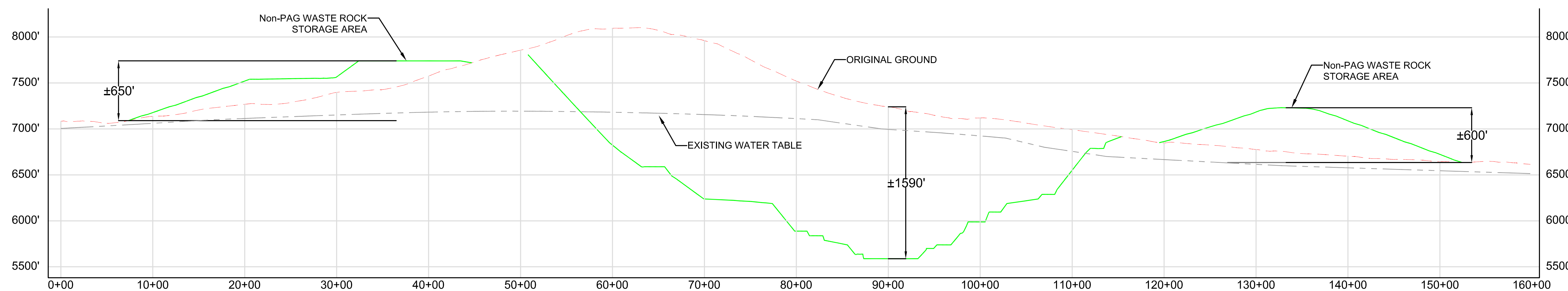
DRAWING TITLE:

Mid Project Life Plan View Open Pit and Facilities

Figure 2.1.3



NOTE:
EXISTING GROUND CONTOURS ARE AT 25' INTERVALS.
PROPOSED CONTOURS ARE AT 20' INTERVALS.



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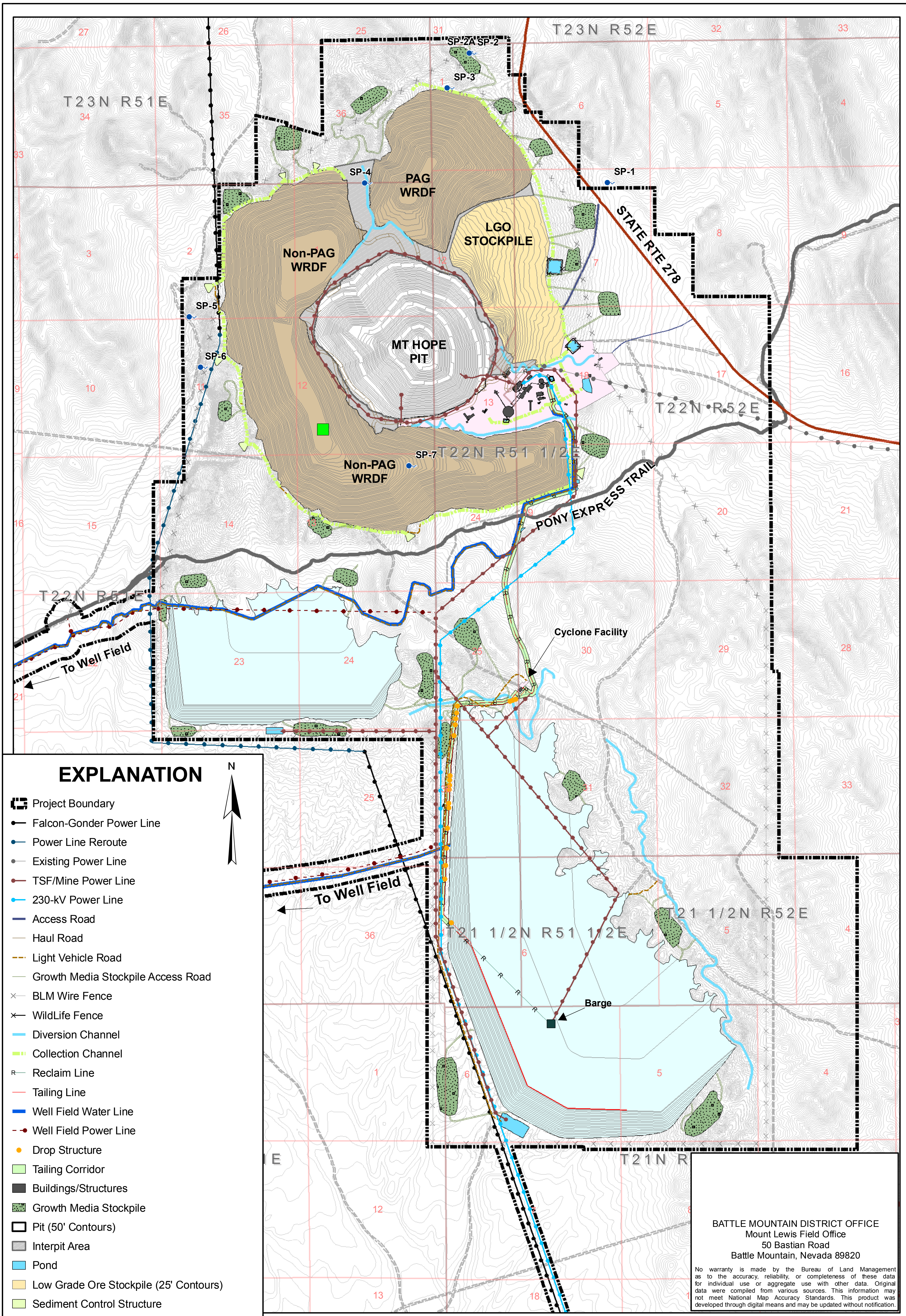
Mid Project Life Cross Secton through Open Pit

Figure 2.1.4



0 2,000 4,000 6,000 Feet

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FILE NAME: p1635_Fig2-1-5_EndLifePlanView_v3.mxd

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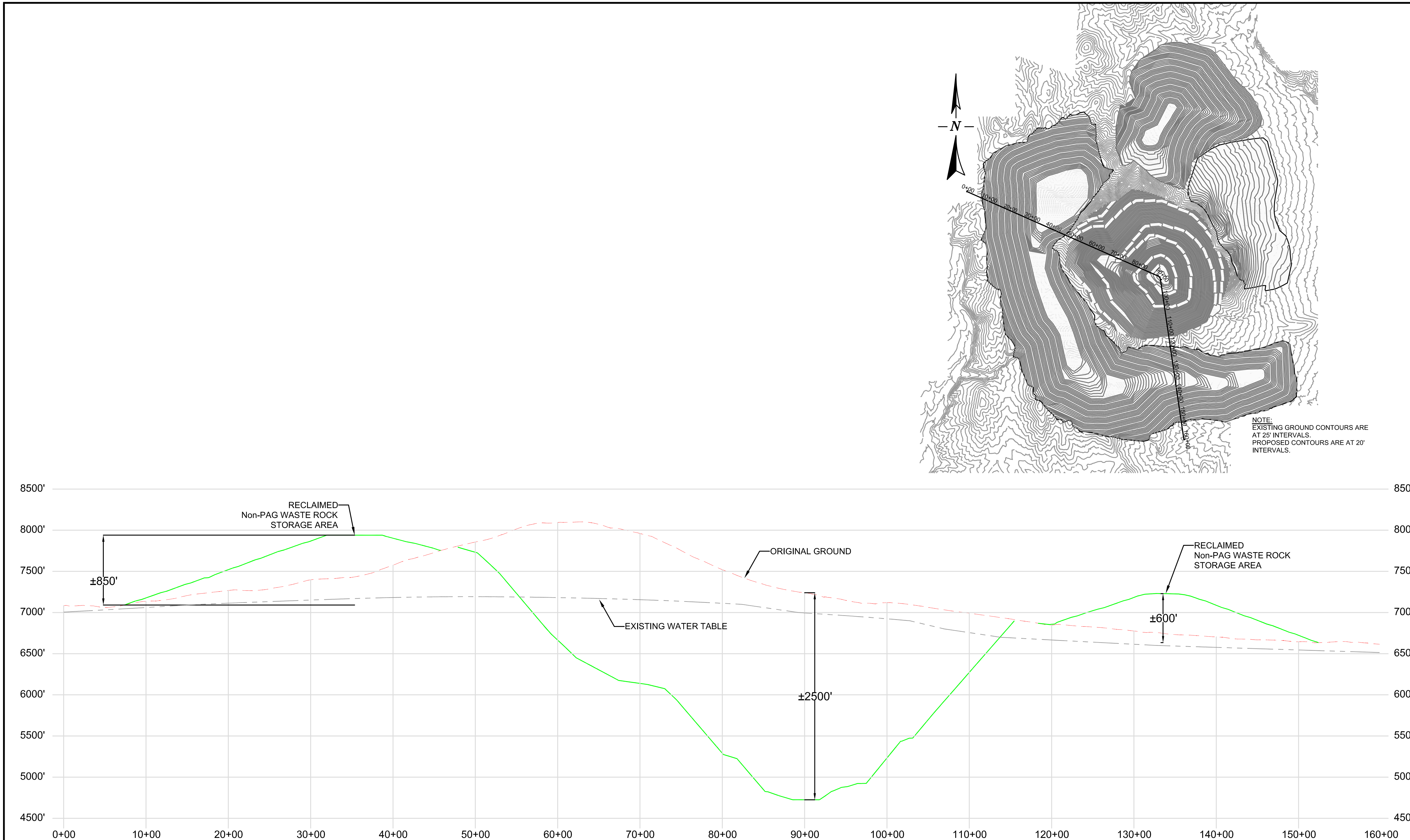
MOUNT HOPE PROJECT

DRAWING TITLE:

Late Project Life Plan View Open Pit and Facilities

Figure 2.1.5



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FILE NAME: p1635_Fig2-1-2&4&6_MineLifeCrossSections_v2.dwg

Late Project Life Cross Secton through Open Pit

Figure 2.1.6

Health Administration (MSHA). Mill-grade ore would be loaded into haul trucks for transport to the primary crusher/conveyor system or high-grade stockpiles. LGO would be loaded into haul trucks for transport to the low-grade stockpile adjacent to the mill. Waste rock would be hauled to the WRDFs for permanent placement. Mining would be conducted 24 hours per day and seven days per week. The mining rate, ore and waste combined, would average 232,000 tons per day (tpd) over the life of the mine. The highest daily mining rates would be encountered during the first 25 years of production and would average approximately 265,000 tpd.

The angle of the open pit mine slopes would be influenced by rock strength, geologic structure, hydrology, pit wall orientation, and operational considerations. A stability analysis was conducted on a single (49 feet) and a double (98 feet) bench height vertical face geometric design to determine the combined impact of structurally controlled plane shear and wedge failures on the bench face. This analysis is presented in Appendix 2 of the Plan (EML 2006), which is on file and available for review at the BLM's MLFO during normal business hours. Based on this analysis, the pit wall slopes would range from 41 degrees (˚) to 49˚ and average 45˚, and the interramp slopes **(i.e., pit wall slopes in between benches)** would range from 45˚ to 53˚. The catch bench widths would vary between approximately 45 feet and 66 feet (CNI 2005). The stability analysis relates to a 22-year mine plan at an ore mining rate of 44,100 tpd. Additionally, EML is committed to review slope stability predictions periodically during the mine life to increase the accuracy of slope stability predictions and to adjust pit designs based on actual mining experience. EML would submit a Plan modification to the BLM should a revision to the pit configuration be necessitated by the updated stability analysis.

2.1.2 Ground Water Management and Water Supply

The Project would require approximately 11,300 acre-feet per year (afy) (approximately 7,000 gallons per minute [gpm]) **of fresh** water supply during the life of the mill processing operation (44 years). Process water would be provided from five different sources: fresh water from the Kobeh Valley Well Field Area; reclaim water from the tailings storage facility; recycled water from the process facility; collected runoff water, including from the PAG WRDF and the LGO Stockpile; and produced water from mine dewatering. After the mill shuts down (Year 44), water demands would essentially become zero, although some water may be necessary for revegetation, domestic uses, or dust control during the reclamation phase of the Project.

2.1.2.1 Water Supply Development

All water used in the process would be routed through the process water tank. The level in the process water tank would control the water delivery rate from the well field. **Pumping from the wellfield would be reduced if water from other sources provided enough water for processing and other water requirements to allow for decreased pumping in the wellfield. Most of the fresh water would be ground water from the Kobeh Valley Wellfield. The fresh water requirement is 7,000 gpm. Most of the water (fresh and non-fresh) used in the project would be for processing Mo ore. Additional smaller amounts would be used for environmental controls (primarily for dust control and to operate the roaster's sulfur dioxide scrubber), potable, and sanitation. Fresh water would be required for some reagent solutions (associated with ore processing), environmental, potable, and sanitation. The rest of the fresh water would be used to "make-up" water requirements for ore processing. The remainder of the total processing requirement, comprising roughly two-thirds to three-**

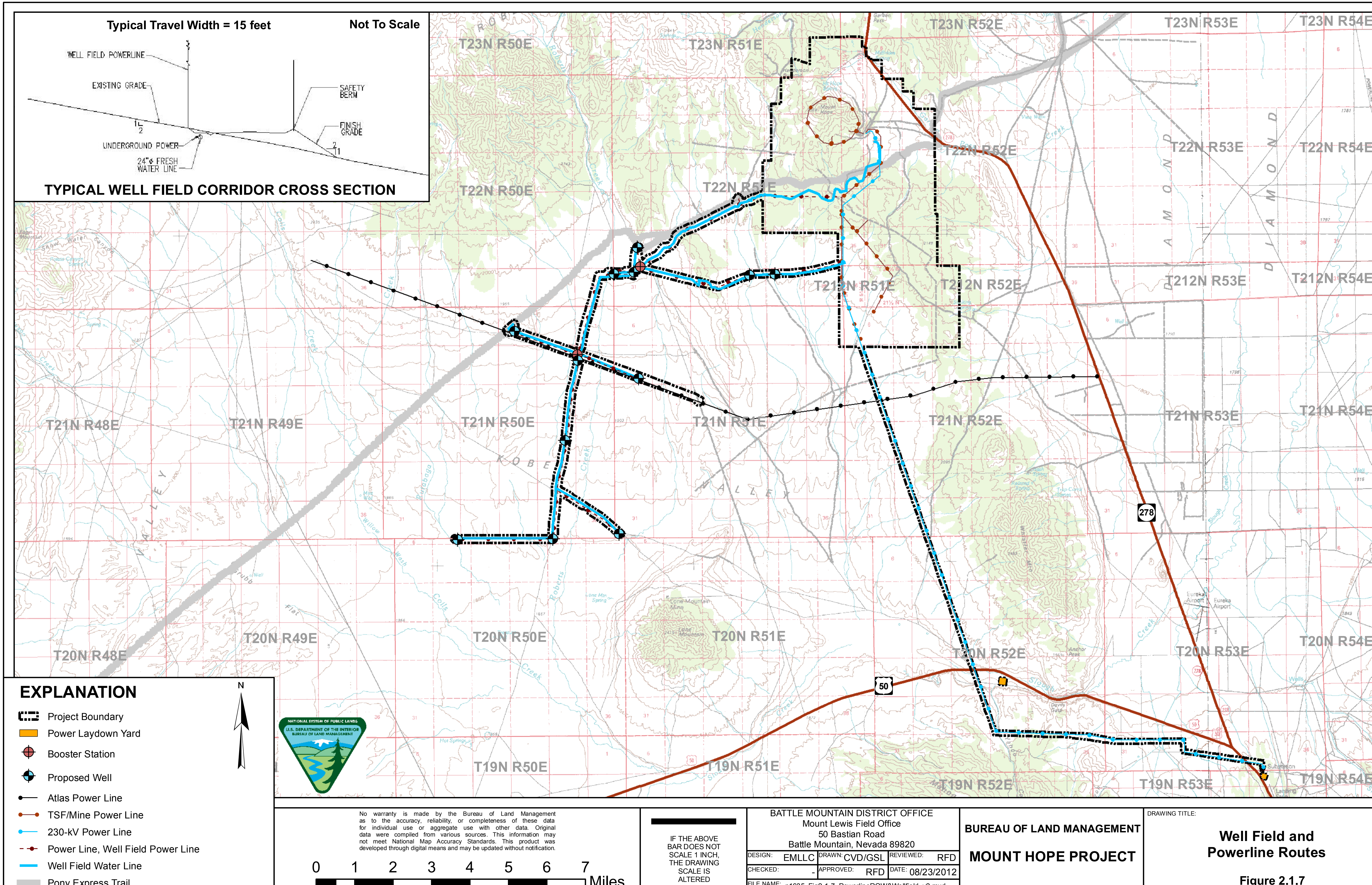
quarters of the total processing requirement, would not be fresh. Non-fresh water includes recycled process water and runoff. Fresh makeup water would be supplied primarily from water wells located in the Kobeh Valley Well Field Area, which would be located entirely within Kobeh Valley. Figure 2.1.7 illustrates, within the Kobeh Valley Well Field Area, the proposed locations of the wells, pipelines, access roads, and power, which consist of eight to 15 wells and two booster stations. It is anticipated that specific well locations may change over the life of this Project, but would be within the Kobeh Valley Well Field Corridor. Each well would be equipped with a pump. Fresh water from each well would be conveyed to a booster station. Water would be pumped to a secondary booster station and further to a one million gallon capacity fresh/fire suppression water tank which would be located at the mill site in the area designated as "Potable, Fresh, and Process Water Tanks" on Figure 2.1.8.

Figure 2.1.7 shows the locations of the initial well field and associated infrastructure. To provide the required fresh water for the Project over the 44-year period of ore processing, the location and number of wells may need to be adjusted within the development area. The primary source of water would be the alluvial aquifer with lesser amounts (no more than ten percent) derived from the carbonate aquifer.

This area is located within all or portions of the following: T20N, R50E; T21N, R50E; T21N, R51E; T22N, R50E; T21N, R51E; T22N, R51.5E; and T22N, R52E. Any change in the number of wells or the location of wells outside of the corridor shown on Figure 2.1.7 would be considered by the BLM MLFO as a modification of the Plan, which would be subject to an appropriate level of environmental review under the NEPA.

Water from the fresh/fire suppression water tank would be **distributed** to the fire suppression water circuit, the mine tank for use in dust control, the potable water circuit, process circuits in the mill facility that require fresh water, and to the gland seal water circuit (water injected at high pressure around a rotating shaft to form a water-tight seal to prevent leaks). Potable water would be supplied from the fresh/fire suppression water tank. Water quality is expected to meet drinking water standards (DWS) (Nevada Administrative Code [NAC] 445A.144). Water would gravity flow from the fresh/fire suppression water tank to the potable water tank with a capacity of approximately 10,000 gallons. EML would secure appropriate permits for the potable water system from the Nevada Bureau of Safe Drinking Water.

Two construction water wells would be located west of the South TSF in the corridor shown on Figure 2.1.7. These wells would supply construction water for the development of the earthen embankment at the South TSF and the main well field. Each well would be powered by a diesel generator; a 500 gallon diesel storage tank in containment would be located at each well. A standpipe would be located at each well to allow water trucks to be filled directly from the wells. The wells would be operated up to 24 hours per day and are projected to provide approximately 300 gpm each. A pipeline approximately ten inches in diameter would deliver water to the unlined earthen TSF Construction Pond. The pipeline would be buried in those areas where it crosses the two-mile buffer for greater sage-grouse (*Centrocercus urophasianus*) leks. This pond would be of sufficient volume to contain approximately one million gallons of water. This water would be used for construction activities, such as wetting the earthen embankment fill material and dust control. Construction water would be used at an average rate of about 300 gpm. A portable pump and standpipe delivery system would be located at the pond to fill water trucks.



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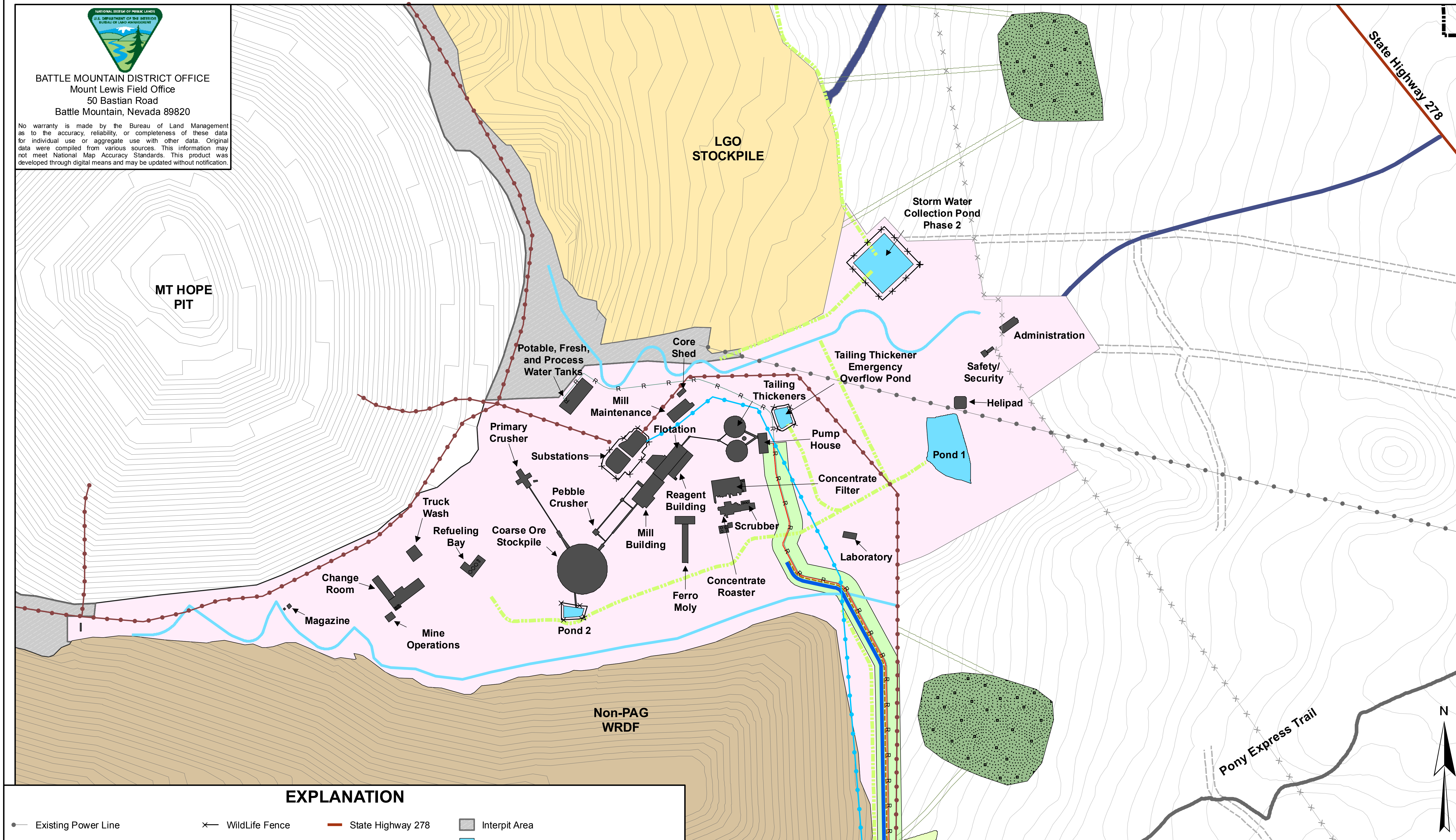
MOUNT HOPE PROJECT

DRAWING TITLE:

Well Field and Powerline Routes

Figure 2.1.7



EXPLANATION

Existing Power Line	WildLife Fence	State Highway 278	Interpit Area
TSF/Mine Power Line	Diversion Channel	Pony Express Trail	Pond
230-kV Power Line	Collection Channel	Project Boundary	Low Grade Ore Stockpile (25' Contours)
Access Road	Reclaim Line	Tailing Corridor	Sediment Control Structure
Light Vehicle Road	Tailing Line	Buildings/Structures	Tailing Storage Facilities (20' Contours)
Growth Media Stockpile Access Road	Well Field Water Line	Growth Media Stockpile	Waste Rock Disposal Facilities (20' Contours)
BLM Wire Fence	Well Field Power Line	Pit (50' Contours)	Yards

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0 500 1,000 1,500 Feet

BUREAU OF LAND MANAGEMENT

MOUNT HOPE PROJECT

DRAWING TITLE:

Conceptual Plant Layout

Figure 2.1.8

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FILE NAME: p1635_Fig2-1-8_ConceptualPlantLayout_v2.mxd

The South TSF seepage collection pond would be constructed early in the construction schedule and would be available for additional water storage if construction water demand increased.

These two wells would be expected to be in continuous operation for approximately 12 months after which time the main well field would supply construction water on an as-needed basis. The wells, pipeline, and standpipe would be left in place following construction and may be used in the future for minor projects, dust suppression or other miscellaneous uses.

2.1.2.2 Mine Dewatering

Dewatering would be required during the mining phase of the Project, with the average pit inflow rate estimated to range between 60 to 460 gpm (100 to 750 afy) commencing in Year 1 of the Project. Mine dewatering is expected to last through Year 32 of the Project. Open pit dewatering would extract ground water from both the Kobeh Valley and Diamond Valley watersheds. Approximately 20 percent of the pit dewatering water would be from Kobeh Valley and 80 percent of the pit dewatering water would be from Diamond Valley, which is proportionally based on the configuration of the open pit relative to the basin divide and the local geology.

Active mine dewatering may not be initiated for several years as inflows during this period may be quite small. Dewatering would proceed throughout mining to ensure that mining would not be negatively affected by ground water inflows. Pit inflows would be managed by in-pit sumps excavated on an as-needed basis. If necessary, horizontal drains and perimeter wells would be utilized during mine operations. The volume of dewatering water would be expected to vary within different sectors of the open pit based on depth and geologic structures and units. The **dewatering water would be considered "**fresh water**" and would be** removed from the open pit **and** used in the mine and mill operations to offset **other "**fresh water" demand**s** from the **production** well field.

2.1.3 Waste Rock Disposal Facilities

The Project would generate approximately 1.7 billion tons of waste rock that would occupy a total footprint of approximately 2,246 acres. Waste rock would be placed in two distinct WRDFs over the life of the mine, which would almost encircle the open pit (Figure 2.1.9). The PAG WRDF would ultimately contain approximately 0.5 billion tons of waste and the non-potentially acid generating (Non-PAG) WRDF approximately 1.3 billion tons. The WRDFs would be constructed in multiple lifts (Table 2.1-3), with typical heights of 100 feet, and setbacks between the lifts that would facilitate final grading to an interbench slope of 2.5 horizontal (H):1 vertical (V) or shallower with a 20-foot wide bench at the toe of each regraded lift. Due to the variations in the underlying topography and the variations in the final heights of the WRDF, there are a total of 11 lifts on the PAG WRDF and 16 lifts on the Non-PAG WRDF. The total height of the WRDFs would range from 750 feet to 950 feet (Table 2.1-3). Although the individual lifts for the PAG and Non-PAG WRDFs total 750 to 950 feet, the WRDFs would be built on sloping ground, and the lower lifts would not extend uphill far enough to lie directly below the upper lifts. The heights of the WRDFs are measured as the maximum thickness above natural topography, and are less than the sum of the individual lifts.

As outlined in Section 2.1.3.2, waste rock from the mining operation would be managed as either PAG waste rock or Non-PAG waste rock. The PAG WRDF would contain PAG materials, and the Non-PAG WRDF would contain Non-PAG materials. Figures 2.1.11, 2.1.12, and 2.1.13 present WRDF configurations at different times throughout the mine life. Figures 2.1.2, 2.1.4, and 2.1.6 present WRDF cross sections at various times during the mine life.

Table 2.1-3: Waste Rock Disposal Facilities Capacities and Height

WRDF Location	Capacity (billion tons)	Total Height (approximate feet)	Top Surface Elevation (approximate feet amsl)	Number of Lifts
PAG WRDF	0.45	700	7,550	11
Non-PAG WRDF	1.3	750-950	7,900	16

The open pit would be connected to the WRDFs by a series of haul road segments and the interpit area. As the WRDFs advance toward the open pit, the road segments being covered would be incorporated into the WRDFs. Design for the WRDFs has been developed on the basis of the geochemical and physical properties of the materials, foundation conditions at the dump sites, and the approximate volume of mine waste that would be produced.

An estimated 4.6 to 49 million tons of Non-PAG material and 2.6 to 29 million tons of PAG material would be extracted annually and placed in the WRDFs. The variation in the annual amounts would be due to the types of materials mined in a given year. This schedule would result in the delivery of approximately 0.5 billion tons of PAG material to the PAG WRDF and 1.3 billion tons of Non-PAG material to the Non-PAG WRDF.

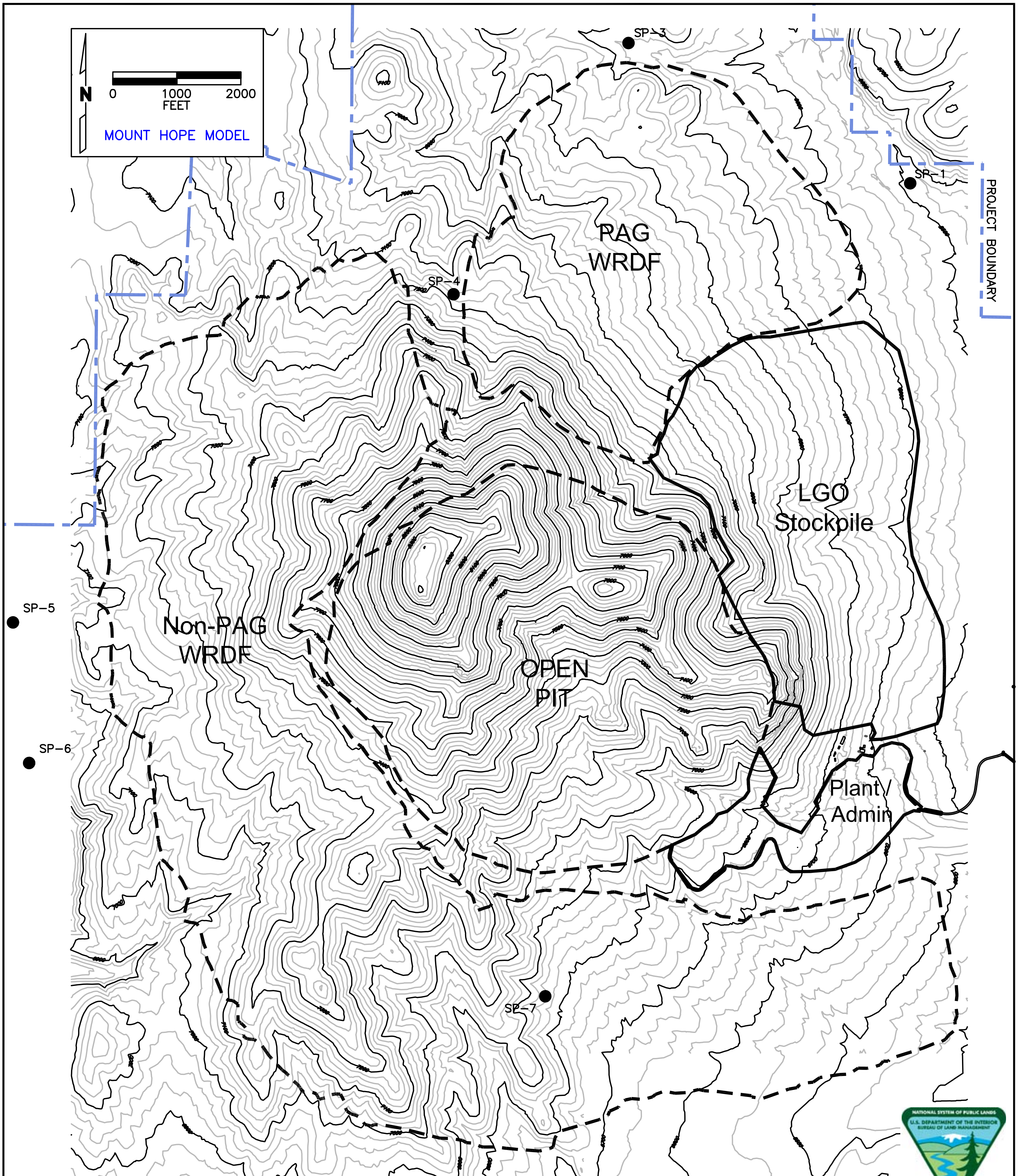
Slope stability analyses were conducted for the WRDFs (EML 2006, page 3-22). Based on the results of the analyses, the WRDFs would be stable for the configurations analyzed (Smith Williams Consultants, Inc. [SWC] 2008a) (Figure 2.1.10).

2.1.3.1 Waste Rock Disposal Facility Design

2.1.3.1.1 Potentially Acid Generating Waste Rock Disposal Facility Design

The PAG WRDF would be designed with a low permeability base layer so that any meteoric water percolating through the PAG material would not infiltrate the subsurface. The objective would be management of water that contacts the PAG waste rock.

To construct the low permeability base layer, the surface would be cleared and grubbed to remove trees, shrubs, vegetation, and salvageable growth media, and graded to achieve positive drainage. **Slash from large trees, shrubs, and roots that are encountered during growth media salvage operations would be mechanically separated from growth media as feasible. This slash material would be stockpiled separately from the growth media where it may be burned, used by the public as fire wood, used in final reclamation as habitat enhancements, or hauled off-site to an approved landfill.** The foundation area would be scarified, moisture conditioned, and compacted to a permeability of less than or equal to 1 x 10^{-5} centimeters per



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EXPLANATION

● SP-# Spring

WRDF Waste Rock Disposal Facility

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08/03/2011	CVD/GSL	RFD

Scale:

Project Number: **1635**

Drawing Name: **p1635_Fig2-1-9_LocationofWRDF.dwg**

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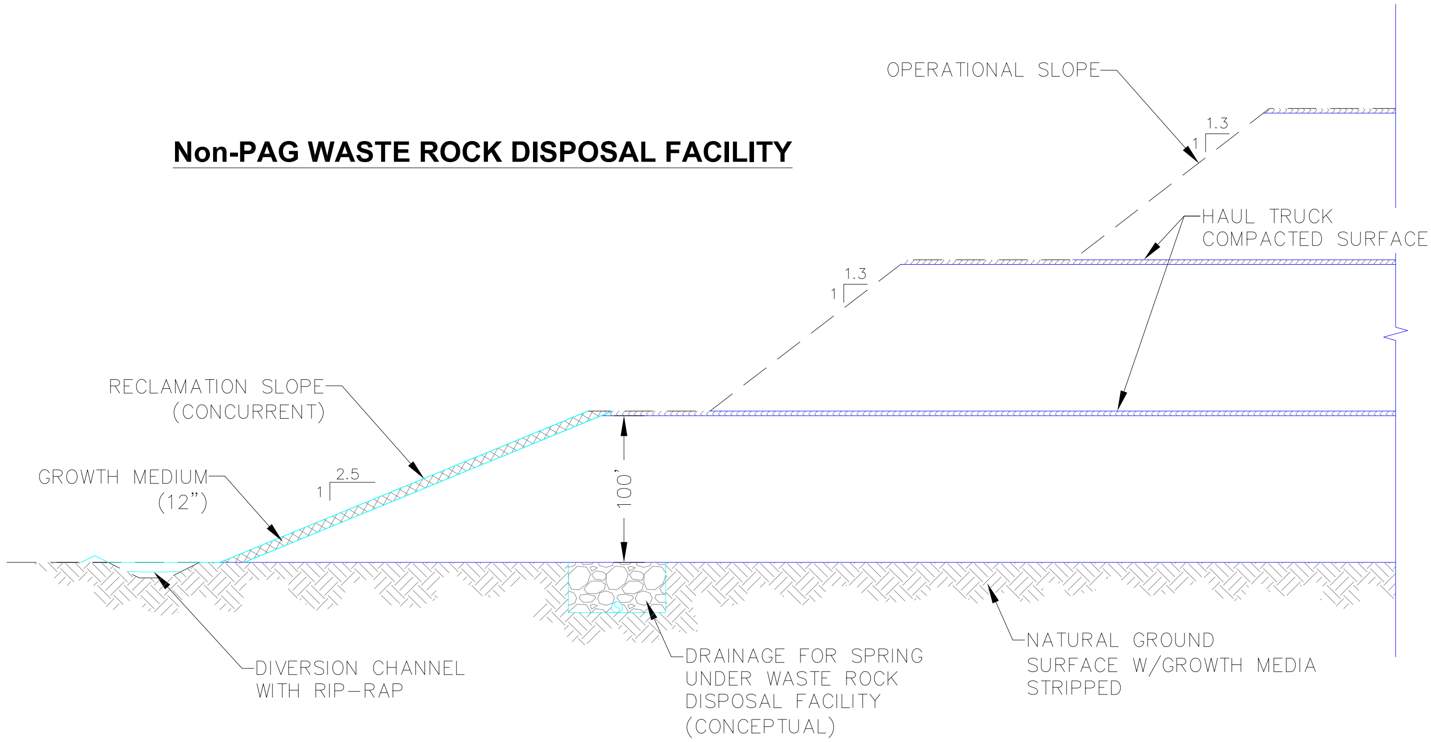
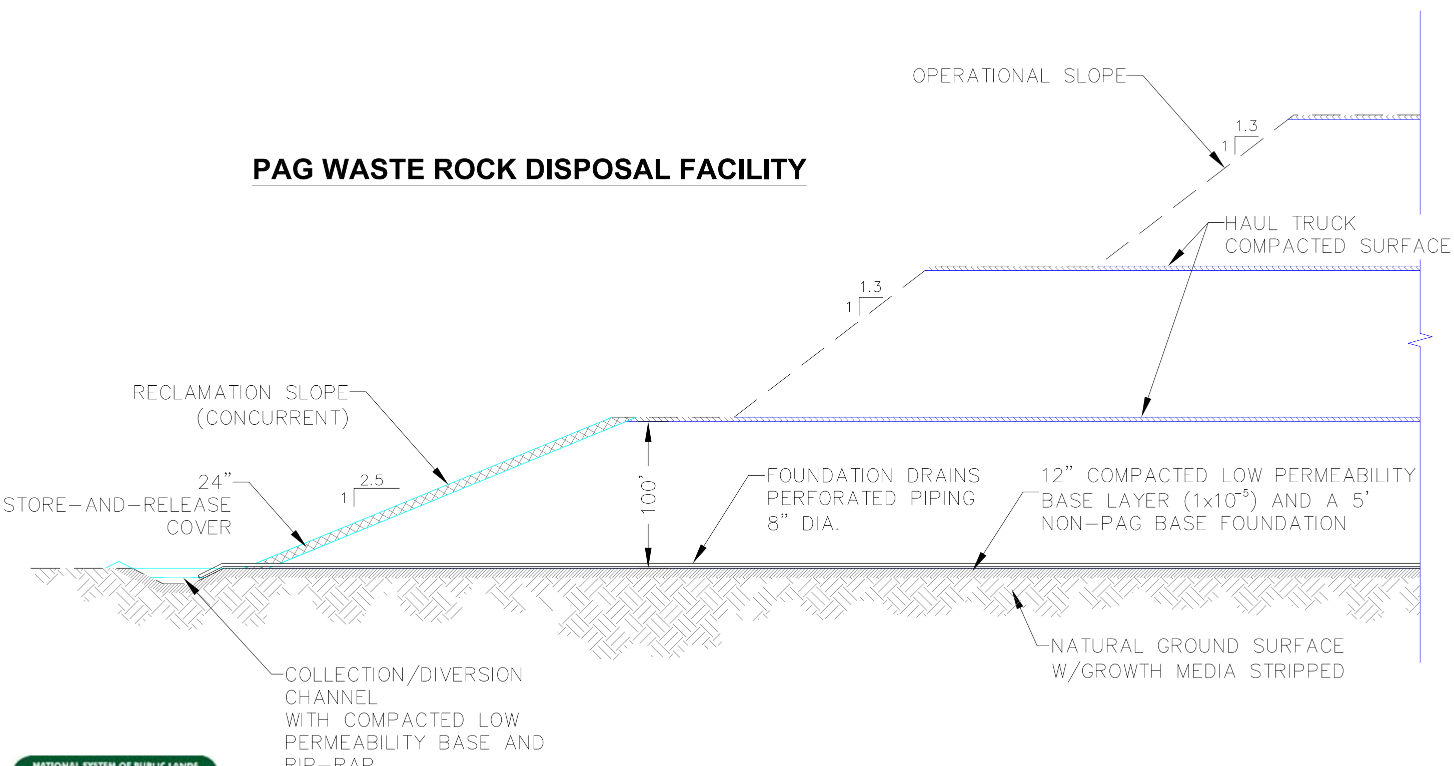
Location of Waste Rock Disposal Facilities

Figure 2.1.9

Non-PAG WASTE ROCK DISPOSAL FACILITY



PAG WASTE ROCK DISPOSAL FACILITY



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Project Number: **1635**		
Drawing Name: p1635_Fig2-1-10&20_WRDFCrossSections.dwg		

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Operational Waste Rock Disposal Facility Cross Section

Figure 2.1.10

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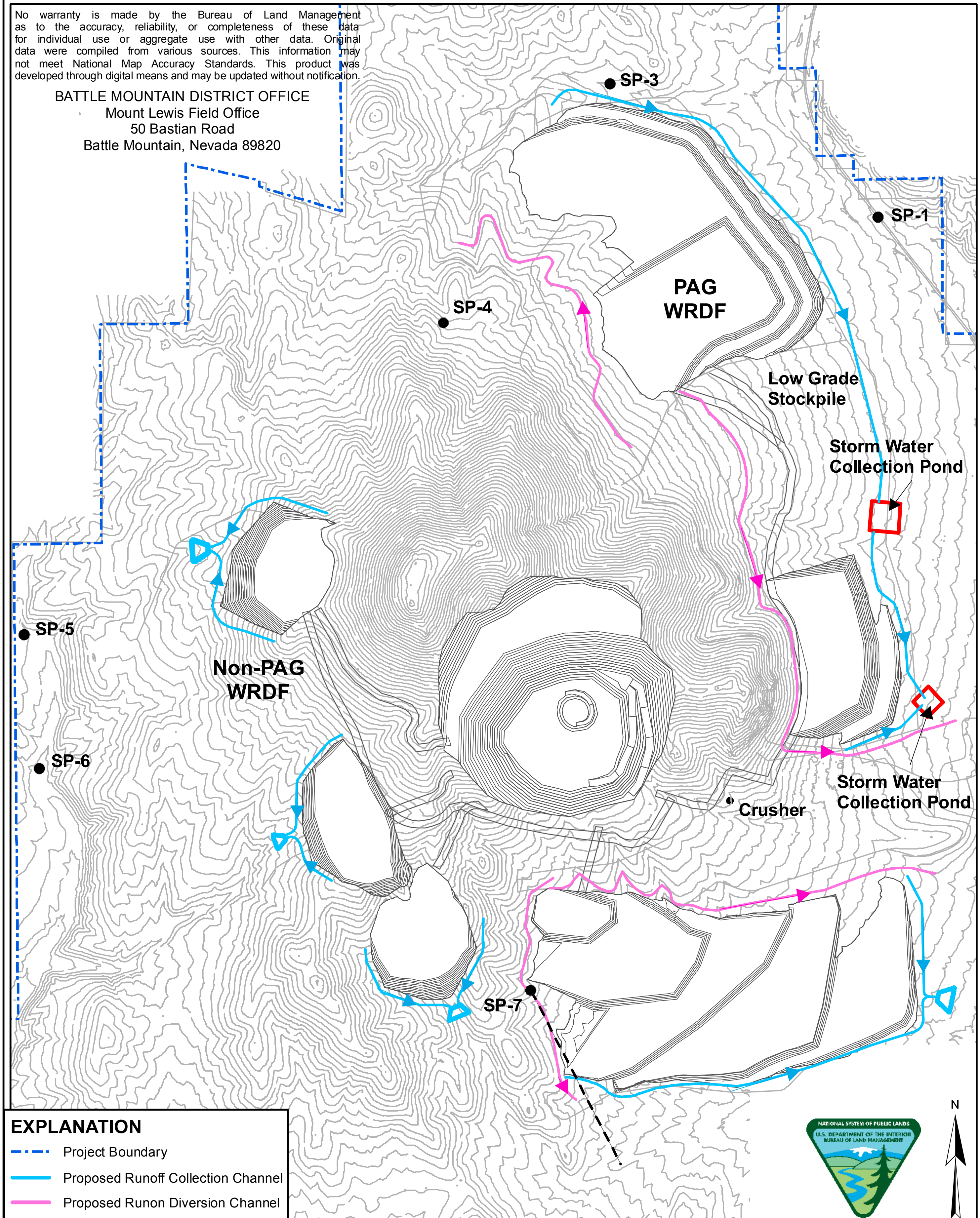

EXPLANATION

- Project Boundary
- Proposed Runoff Collection Channel
- Proposed Runon Diversion Channel
- Subdrain for Spring SP-7
- SP-7 Spring
- Sediment Control Structure
- WRDF Waste Rock Disposal Facility

0 1,000 2,000 Feet

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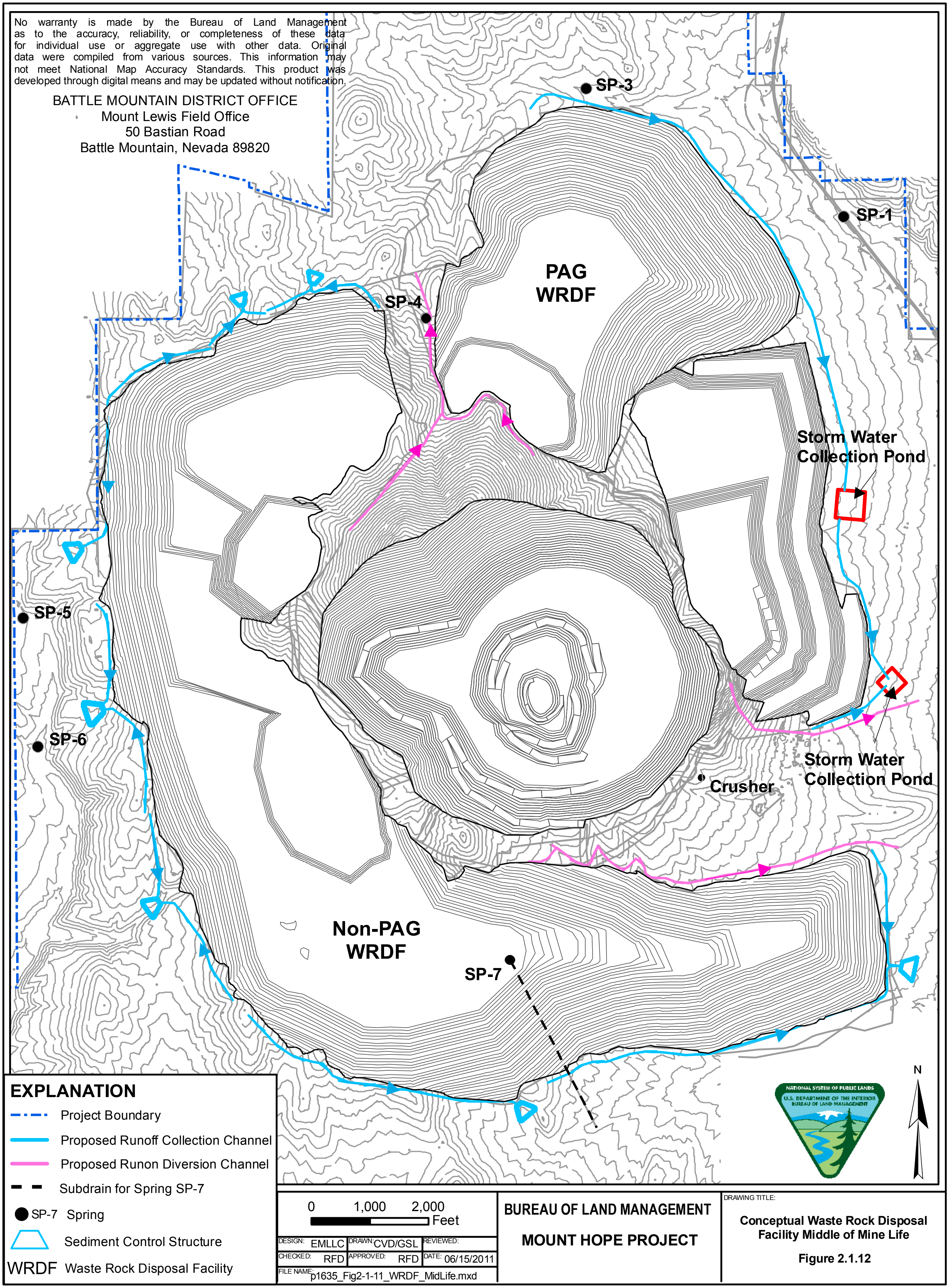
Conceptual Waste Rock Disposal Facility Early Mine Life

Figure 2.1.11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SP-3
SP-1
SP-4
PAG
WRDF
Storm Water
Collection Pond
SP-5
SP-6
Storm Water
Collection Pond
Crusher
Non-PAG
WRDF
SP-7
EXPLANATION
Project Boundary
Proposed Runoff Collection Channel
Proposed Runon Diversion Channel
Subdrain for Spring SP-7
SP-7 Spring
Sediment Control Structure
WRDF Waste Rock Disposal Facility
N
0
1,000
2,000
Feet
DESIGN: EMLLC
DRAWN: CVD/GSL
REVIEWED:
CHECKED: RFD
APPROVED: RFD
DATE: 06/15/2011
FILE NAME: p1635_Fig2-1-11_WRDF_MidLife.mxd
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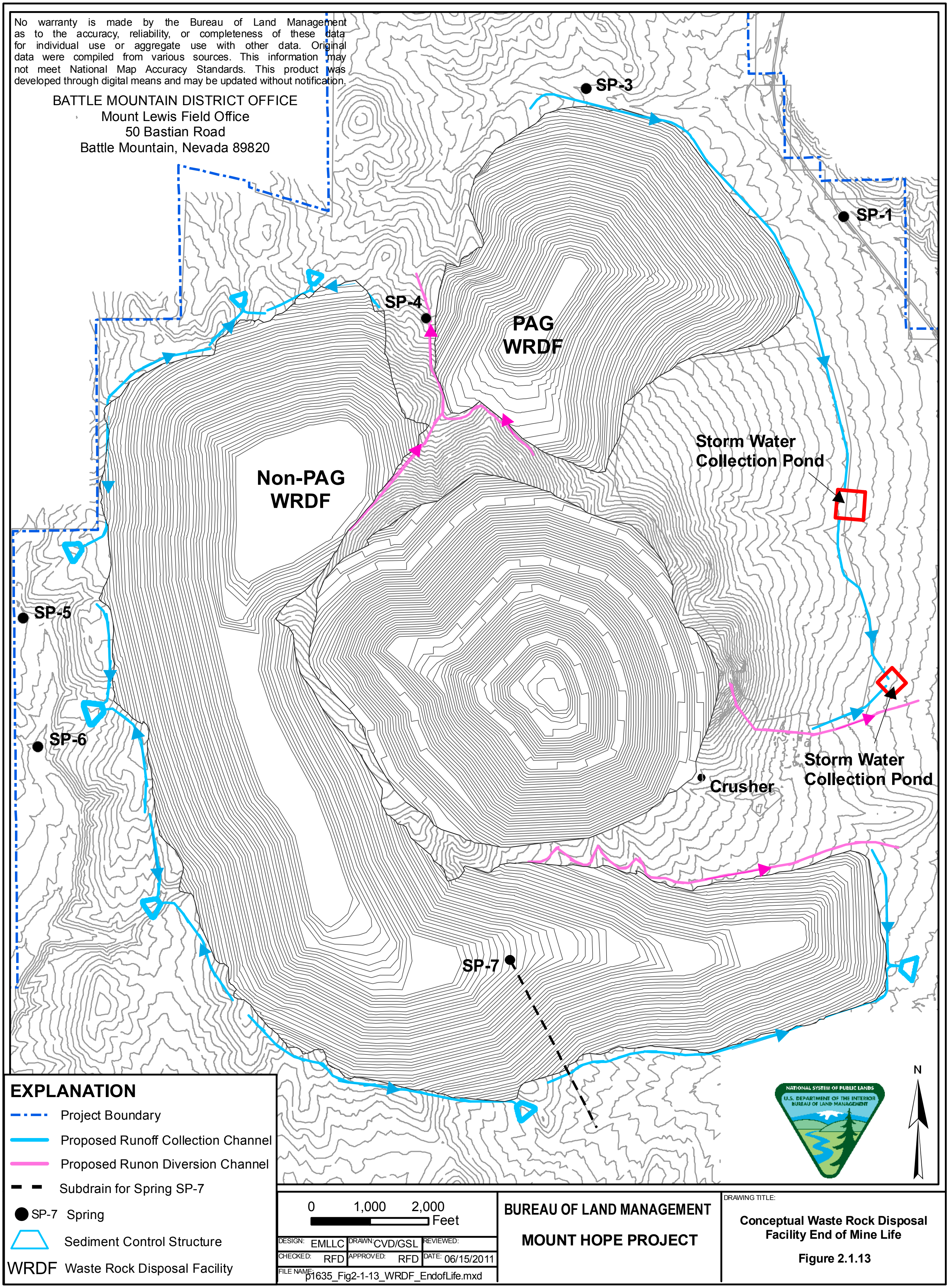
MOUNT HOPE PROJECT
DRAWING TITLE:
Conceptual Waste Rock Disposal
Facility Middle of Mine Life
Figure 2.1.12



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MOUNT HOPE PROJECT

DRAWING TITLE:

Conceptual Waste Rock Disposal Facility End of Mine Life

Figure 2.1.13

second (cm/sec) and a five-foot thick overlying Non-PAG layer for the foundation. Foundation drains consisting of appropriately sized pipe would be installed within natural drainages of the WRDF foundation to collect precipitation infiltrating through the waste rock and direct it laterally along the foundation to a collection channel located at the east toe. The collection channel would report to a lined pond. Storm water controls would be constructed as discussed in Section 2.1.7.4.

2.1.3.1.2 Non-Potentially Acid Generating Waste Rock Disposal Facility Design

No restrictions would be imposed on the handling and placement of Non-PAG material, some of which may be used as fill for constructing roads or mine facilities or for reclamation purposes elsewhere. The remainder of this material would be placed on the Non-PAG WRDF, south and west of the open pit.

The foundation of the Non-PAG WRDF would be prepared by clearing and grubbing to remove trees, shrubs, vegetation, and salvageable growth media. **Slash from large trees, shrubs, and roots that are encountered during growth media salvage operations would be mechanically separated from growth media as feasible. This slash material would be stockpiled separately from the growth media where it may be burned, used by the public as fire wood, used in final reclamation as habitat enhancements, or hauled off-site to an approved landfill.** The material would be placed directly on the cleared surface with no additional foundation preparation. A sub-drain would be constructed at the location of a spring (SP-7 shown on Figure 2.1.13) by installing a foundation drain. The spring water would then be conveyed to the perimeter of the facility and into a natural drainage. Storm water controls would be constructed as discussed in Section 2.1.7.4.

2.1.3.2 Waste Rock Management

EML has developed a WRMP, which is incorporated into the Plan (EML 2006, Appendix 4) and is summarized in this section of the Proposed Action, to characterize and predict the potential geochemical reactivity and stability of waste rock from the Project operations. The characterization addresses mineralogy, bulk geochemical characteristics, and potential of the material to generate acid or net neutral drainage. Based on the characterization, the WRMP also outlines a waste rock classification system to be used for the management of waste during WRDFs construction.

The WRMP documents the procedures for characterizing, classifying, and managing waste rock associated with the Project for surface waste rock disposal. A complete description of the waste rock characterization program and the results are provided in SRK Consulting, Inc.'s (SRK's) WRMP (2007a). Specifically, the WRMP includes the following:

- Characterization of waste rock according to geochemical testing;
- Characterization of the nature and volume of waste rock to be produced according to the current long range mine plan;
- Classification of the waste rock according to operational criteria for waste rock management;

- Waste rock deposition procedures to minimize potential oxidation and solute generation; and

- Reclamation and closure activities planned for the WRDFs, as discussed in Section 2.1.16.9.

The WRMP incorporates Acid Base Accounting (ABA) and solute generation information with general waste rock volumes and types in order to optimize the development of WRDFs and minimize the potential for constituent release, while supporting final closure actions.

The WRMP would be updated and modified as needed to integrate data from ongoing geochemical studies, mine modeling changes, mine planning, WRDF performance monitoring, or other information. The proposed mining operations, and thus the WRDF construction, are estimated to last 32 years.

2.1.3.2.1 Waste Rock Classification

The criteria used in the classification of materials for use in waste rock management need to be sufficiently sensitive to the indicators of metal leaching and acid generation as defined by the characterization program, but simple enough for operational waste management. The geochemical characterization study, which is included in the Plan (EML 2006, Appendix 5), has shown that there is a relative lack of carbonate and the primary control on metal leaching and acid generation for the Mount Hope material types is the concentration of sulfide minerals, which can be quantified by the measurement of total sulfur (S). This parameter is also the most sensitive of the geochemical characteristics evaluated during the characterization program and provides the most reliable prediction of acid generation potential. Consequently, total S has been selected as the main diagnostic indicator of metal leaching and **acid-generating potential (**AGP**)** associated with the Mount Hope waste rock material types.

The BLM guidelines (IM No. NV-2008-32 and NV-2010-014) consider waste rock to be Non-PAG without additional kinetic testing if there is 300 percent excess neutralizing capacity (i.e., Neutralization Potential Ratio [NPR] greater than 3).

Results of the Mount Hope static and kinetic tests demonstrate that waste rock materials with greater than 0.5 weight percent total S are acid generating and materials with less than 0.3 weight percent total S are non-acid generating. Waste rock materials with total S values between 0.3 and 0.5 weight percent demonstrate variable geochemical behavior. However, waste rock materials that fall within this range of total S content (i.e., between 0.3 and 0.5 weight percentage) only comprise a small portion of the total waste rock (i.e., less than one percent based on the current mine plan) and would therefore be conservatively classified as PAG material for the purposes of waste rock classification and management.

Based on site-specific static and kinetic test work, the materials at Mount Hope can be segregated into two waste rock management classes:

- Non-PAG; and
- PAG.

Materials that have greater than 0.3 weight percent total S are classified as PAG and materials that have less than 0.3 weight percent total S are classified as Non-PAG.

The criteria are outlined in Table 2.1-4.

Table 2.1-4: Mount Hope Waste Rock[1] Classification System

Total Sulfur	Waste Classification
S > 0.3%	PAG
S ≤ 0.3%	Non-PAG

[1]Waste Rock = rock with less than 0.034 percent Mo

Total S can be quickly estimated in the on-site laboratory by analysis in a LECO manufactured analyzer. The results from the on-site laboratory would be used to classify waste rock according to the criteria summarized in Table 2.1-4.

2.1.3.2.2 On-Site Waste Rock Segregation

Blast hole cuttings would be collected for the LECO process at the on-site laboratory. One sample would be collected from each blast hole. If justified by data collected during operations, a reduction in sampling frequency could be proposed. These data would be used to define the waste type per the criteria summarized in Table 2.1-4. Waste types would be routed directly from the open pit to the appropriate WRDF.

As mining continues and the ore/waste model is refined, the model prediction of the sulfide content could be used along with selective laboratory analysis to route waste rock. **The method of routing waste rock by using selective laboratory analysis and model predictions would be augmented with visual inspection of waste rock to further verify sulfide content, and comparison of model results with previously mined benches to confirm the accuracy of the predictive model. Authorization from the BLM and BMRR would be obtained prior to implementing this alternative waste segregation method.**

2.1.4 Low-Grade Ore Stockpile

The LGO would be mined during pre-stripping through Year 32 and stockpiled for subsequent processing in Years 32 through 44. Approximately 263 million tons of LGO would be placed in a series of lifts to the east of the open pit as shown on Figure 2.1.9. The LGO Stockpile would generally be constructed in multiple lifts with typical heights of 100 feet and setbacks between lifts.

The LGO Stockpile would be constructed on a compacted base in the same manner as the PAG WRDF and would have similar storm water and drainage management systems installed. The material in this stockpile could be processed periodically throughout the mining operation or after mining operations have ceased. At closure, the LGO Stockpile area would be completely cleared of low-grade material and then reclaimed.

2.1.5 Ore Processing Facilities

The process components at the mill would consist of the following: crushing and ore storage**;** stockpile reclaim and grinding, flotation and regrind**;** Mo concentrates dewatering**;** concentrate leaching**;** concentrate roasting**;** TMO packaging**;** FeMo alloy production and packaging**;** and reagent use and storage.

Molybdenite would be recovered from the ore using conventional concentration methods. The nominal throughput rate would be 60,500 tpd. Actual processing rates may be lower or higher based on ore hardness and realized equipment efficiencies. The primary crusher and conveyors would be designed to handle a maximum of 114,000 tpd. The stockpile feeders and grinding circuit would be designed to handle a maximum of 86,400 tpd. Figure 2.1.8 shows the conceptual plant layout.

The milling operations would include conventional crushing, wet grinding, and rougher flotation, using a standard reagent scheme for mineral recovery. Thickeners and filters would dewater concentrates to produce a filter cake for further processing in a roaster. The Mo circuit would produce a concentrate with a Mo content of approximately 55 percent at a projected Mo recovery of 82 to 88 percent depending on mill feed grade and **mineral characteristics**. Mo concentrate with impurity levels that would be outside of customer specifications would be leached by a ferric chloride process to reduce the impurity concentrations to the specified levels. Mo concentrate with low levels of impurities may be sent directly to the roaster without leaching. Figure 2.1.14 presents a schematic of the process flow.

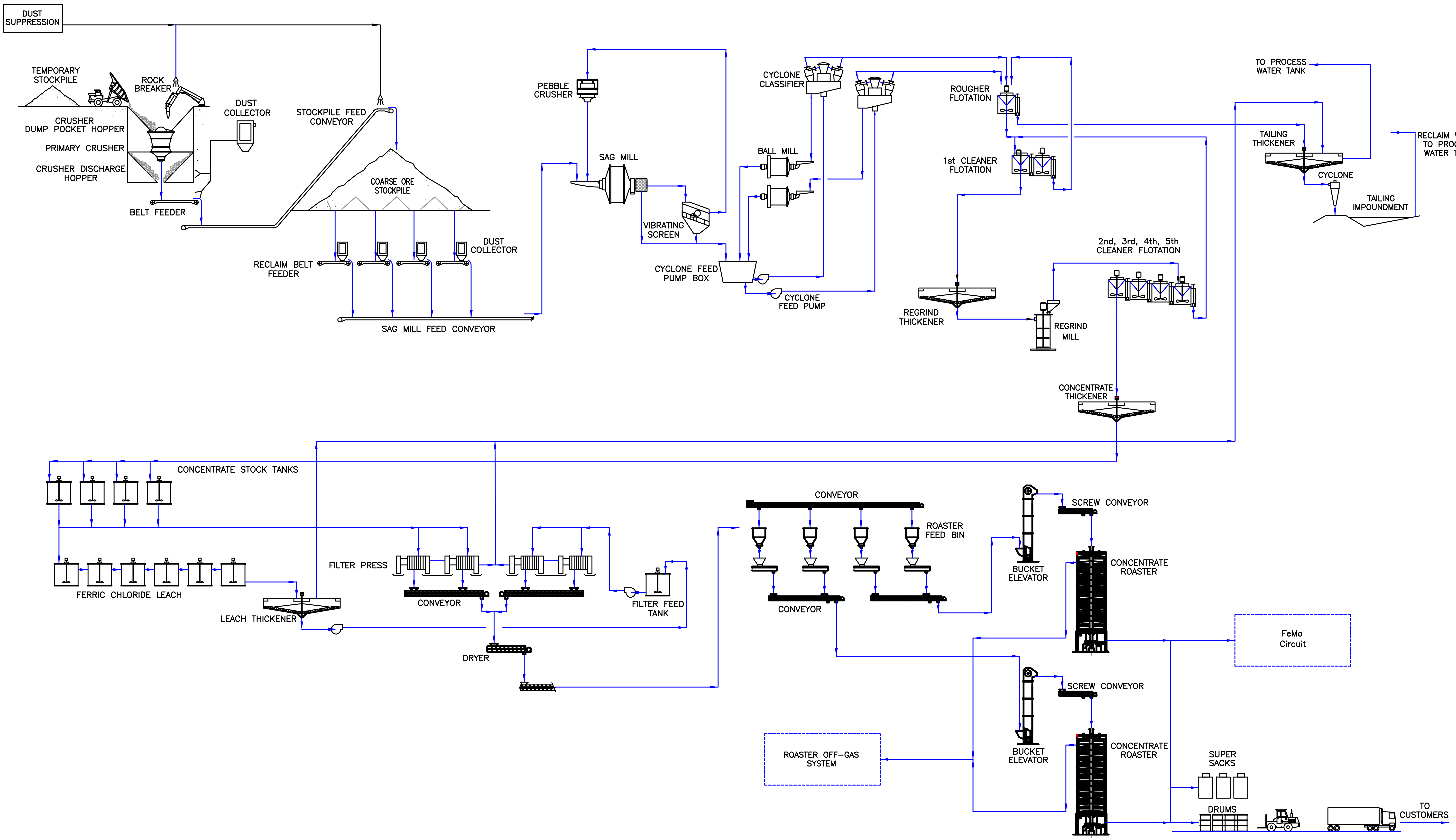
Dried Mo concentrate would be processed in a multi-hearth roaster with a maximum throughput capacity of approximately 50 million pounds of Mo metal contained in TMO per year. Up to 50 percent of TMO produced could be converted to FeMo alloy using a metallothermic process.

EML proposes to toll roast (the practice of processing another party's concentrate at another facility for a specified price) Mo concentrates produced by other mines to productively utilize the full capacity of the roaster at a rate of approximately seven 22-ton capacity highway trucks per day. Toll concentrates would be stored in the Concentrator Filter Building prior to processing (Figure 2.1.8). If the toll concentrates require pre-treatment prior to roasting to remove impurities, these concentrates would be directed to the ferric chloride leach circuit as shown in Figure 2.1.14.

2.1.5.1 Crushing and Ore Grinding

Run-of-mine ore would be delivered to the primary crusher station by haul trucks. Under normal operations the trucks would discharge directly into the crusher dump pocket hopper. When the crusher is not operational, trucks would unload ore onto a temporary ore stockpile **in the pit or immediately** adjacent to the crusher station with a capacity for several days of ore processing.

The primary crusher station would be a conventional fixed structure with a dump pocket hopper positioned directly above the gyratory crusher. A hydraulically operated pedestal mounted rock breaker would be installed at the dump pocket. The dump pocket hopper would be designed to be capable of receiving ore simultaneously from two haul trucks. Primary crushed ore would be



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Process Flow Diagram

Figure 2.1.14

transferred from the crusher discharge hopper to the coarse ore transfer conveyor by a belt feeder.

A stockpile feed conveyor would carry primary ore (nominal six-inch crushed size) from the primary crusher onto the coarse ore stockpile. A dry cartridge filter type dust collector system would be installed in the crushing area to control dust at the crusher discharge hopper and the belt feeder. A water spray system would be used for dust suppression at the dump pocket hopper. A water spray system would be installed at the discharge point of the stockpile feed conveyor to the coarse ore stockpile to suppress dust generated from material discharge onto the pile.

Primary crushed ore would be stockpiled on a lined coarse ore stockpile. A reclaim tunnel beneath the stockpile with four reclaim belt feeders would discharge onto the SAG mill feed conveyor. The coarse ore stockpile would have a capacity of approximately 300,000 tons. The live capacity (material that can be recovered by the feeders without working the stockpile) would be approximately 68,000 tons. During periods of downtime on the crushing and coarse ore conveyor system, dozers or other equipment would push ore from the perimeter areas of the stockpile into the reclaim feeders. A dry cartridge filter type dust collector system would be installed to control dust at the discharge of the reclaim feeders.

2.1.5.2 Grinding

The SAG mill is a wet grinding process and would operate in closed circuit with a trommel screen, vibrating screen, and **potentially a** pebble crusher. Screen undersize would flow from the screens to the primary cyclone feed pump box where it would be pumped to cyclone classifiers. Screen oversize would be conveyed to the pebble crusher where it would be crushed before being sent back to the SAG mill. The two ball mills would operate in parallel and in closed circuit with the cyclone classifiers. Underflow from the cyclone classifiers would flow to the ball mills. Ball mill discharge would flow to the cyclone feed pump box for circulation back through the cyclone classifiers. The SAG mill would have a nominal fresh feed rate of 2,746 tons per hour (tph) and a maximum design fresh feed rate of approximately 3,600 tph. Actual mill throughput would vary due to the ore hardness, flotation characteristics, and equipment efficiencies.

2.1.5.3 Flotation and Regrind

Overflow from the cyclone classifiers would flow by gravity to the rougher flotation circuit and further to the cleaner and cleaner scavenger circuits. There would be two rows of eight rougher flotation cells. The rougher flotation concentrate from the two rows would flow by gravity to the rougher concentrate sump from which it would be pumped to the cleaner flotation cells. Tailings from the rougher flotation cells would flow to the tailings thickener.

Rougher concentrate would proceed to the first cleaner flotation cells and the first cleaner scavenger flotation cells. Tailings from these float stages would join the rougher tailings stream and be sent to the tailings thickener. Should the tailings be high in Mo, the cleaner scavenger tails would be recycled to rougher feed. The first cleaner concentrate would be reground in the **regrind** mill operated in closed circuit with cyclone classifiers. The regrind cyclone classifier underflow would report back to the regrind mill and the overflow to the second, third, fourth, fifth**, sixth, and seventh** cleaner flotation stages.

Concentrate from the **seventh** cleaner flotation stage would be thickened in the final concentrate thickener. The thickener underflow would be pumped to one of four stock tanks in the ferric chloride leach plant.

2.1.5.4 Ferric Chloride Leaching and Dewatering

The primary purpose of the ferric chloride leach process is to reduce the concentration of impurities such as copper (Cu), lead (Pb), iron (Fe), and zinc (Zn) in the molybdenite concentrate. Flotation concentrates that meet the specifications would bypass the leach circuit and proceed to the dewatering circuit.

Flotation concentrate would be stored in one of four stock tanks, each sized to store 24 hours worth of production. Concentrate in each stock tank would be sampled and assayed for Mo, Cu, Pb, Fe, and Zn. Based on the analysis, the concentrate slurry would be pumped to the ferric chloride leach circuit or bypassed to two filters. From the filters, the filter cake would discharge to conveyors to be transferred to dryers.

Flotation concentrate sent to the ferric chloride leach circuit would be pumped to six agitation tanks operating in series. In the leach tanks, impurities would be dissolved in a ferric chloride and hydrochloric acid solution at 180 to 200 degrees Fahrenheit (ºF) for 16 to 24 hours. The leached concentrate slurry would then flow to the leach thickener. After thickening, the concentrate would be filtered through two filters and filter cake would discharge to a conveyor to be transferred to dryers. The dried concentrate would be conveyed to the roaster feed bin.

2.1.5.5 Technical Grade Molybdenite Oxide Plant

Molybdenite concentrate would be roasted to produce TMO in two multiple hearth furnaces, operating in parallel. Concentrate would primarily come from the on-site mill. However, concentrate from offsite may be used and toll roasted to supplement the on-site concentrate to allow the roaster to operate on a more consistent basis at the designed and permitted capacity. The delivery of the off-site concentrate would be up to seven 22-ton capacity highway trucks per day. The transportation off-site of the roasted concentrate would require up to nine 22-ton capacity highway trucks every two days.

Concentrate would be discharged from the four roaster feed bins and conveyed to feed ports at the top of the roasters. In the roaster, the concentrate would travel down through multiple hearths via the raking action of rabble arms that would be attached to a rotating center shaft. Oxidation of the concentrate would take place as the material traveled through the furnace, which would operate at 1,000 to 1,300 ºF. Oxygen would be supplied by ambient air pulled into the furnace through the hearth windows. Final TMO product would be transferred to the product packaging circuit.

The TMO may be packaged in various types of containers such as cans, drums, or super sacks or made into briquettes for shipment in drums or super sacks. TMO made into briquettes would be transferred to the pug mill where ammonium hydroxide would be added to create a paste. The paste would be discharged to a briquette machine, and briquettes would be discharged onto a curing conveyor. Briquettes would be transferred to drum loaders. TMO to be shipped as powder would be transferred from the TMO day bins through a series of bins and conveyors to a drum loader.

Roaster off gas would contain S oxides (mostly sulfur dioxide [SO_2]), moisture, nitrogen (N), excess oxygen and entrained dust particles consisting of Mo oxides and molybdenite. The off gas treatment would consist of dust recovery followed by wet gas scrubbing to remove the SO_2. This scrubbing system would produce a gypsum solid, which depending on regulatory limitations, could be recycled to local agricultural operations as a soil supplement.

Up to 50 percent of TMO produced could be converted to FeMo alloy using a metallothermic process. Essentially, the process would involve reduction of TMO and iron oxide by aluminum (Al) and silicon (Si). The process is highly exothermic and would reach completion within ten to 20 minutes after ignition. A typical batch would consist of 2,000 pounds of TMO, to which is added Al metal powder, Fe oxide ore (hematite or magnetite), and ferrosilicon alloy (FeSi). Lime and calcium (Ca)-Al would be added for fluxing, as well as dust recycled from the baghouse. The mixture would be thoroughly blended, loaded into a refractory lined vessel and ignited. Combustion fumes and dust would be collected through a hood and filtered through a high temperature baghouse. After 24 hours, the metal solidifies and cools and would be lifted out with crane operated tongs. The remaining slag and sintered sand on the metal button would be knocked off. The alloy would be quenched in water and allowed to cool for two to four hours. The button would be broken down by hand sledging or with a rock breaker to a size that could be fed to jaw and cone crushers for final size reduction and packaging. The slag would be processed to recover occluded metal shots and prills for recycling into future batches. The slag recovery process would include crushing and grinding, followed by gravity concentration. The slag, being a glassy material of the flux oxides, would be inert and suitable for waste disposal in the Class III landfill. **Prior to disposal in a Class III landfill, EML would characterize the slag, as required by applicable NDEP and EPA regulations.**

2.1.6 Tailings Storage Facilities

The TSFs would consist of two separate embankments constructed in phases, impoundments, tailings conveyance and distribution system, reclaim recovery systems, and tailings draindown recovery systems (Figure 2.1.15). Figure 2.1.5 shows the locations of the North and South TSFs.

The tailings production rate would range from approximately 21 to 23 million tons per year (tpy) for the 44 years of operation. The combined storage capacity of the TSFs is approximately 966 million dry tons. EML selected these two facility locations based on the analysis of multiple sites. This analysis is incorporated in the EIS as Appendix **B**.

The South TSF would have a capacity of approximately 790 million tons, which would equate to approximately 36 years of production. The North TSF would be constructed before the South TSF facility reaches capacity at Year 36, to contain 176 million tons, which would equate to approximately eight years of production.

The TSF embankment foundation and impoundment basin would be lined using a 60 mil (0.06 inch) linear low density polyethylene (LLDPE) geomembrane, with a coefficient of permeability (K) of 1 x 10^{-11}cm/s to provide fluid containment. This level of containment exceeds that required by the State of Nevada under NAC 445A.437 for facilities with ground water in excess of 100 feet.

The LLDPE geomembrane liner system would be covered with 18 inches of drainage material to provide a hydraulic break between the tailings and liner system and to provide puncture protection for the liner.

The tailings slimes would essentially act as an extended liner system above the LLDPE geomembrane liner with inherent permeability ranging between **1 x** 10^{-6} and **1 x** 10^{-7} cm/s. Details of the TSF such as design drawings, technical specifications, and an operations and maintenance manual would be issued to NDEP and the BLM for review prior to construction. The design report was submitted as part of the Plan.

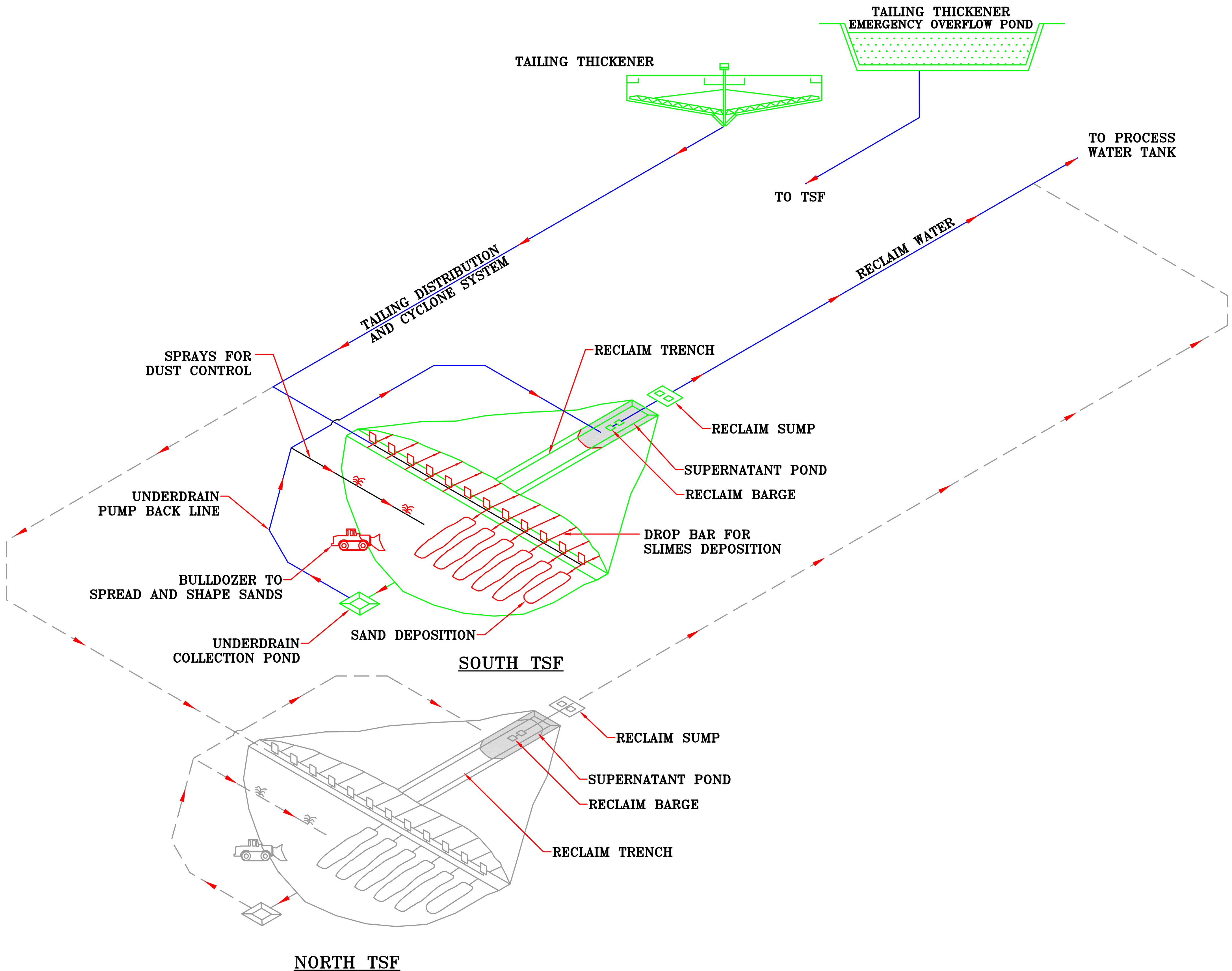
Water from the impoundment would be continually recycled back to the process stream during operations. Some residual reagents would be present and would be recycled back to the process stream in the reclaimed water.

Slope stability analyses were conducted in support of the conceptual design of the Mount Hope TSF embankment. This assessment examined the stability of the proposed South TSF ultimate embankment under both static and seismic loading conditions. The South TSF was selected for this assessment because the embankment is appreciably higher than the North TSF embankment, with all other factors generally being equal. As shown in the assessment, the proposed facility is stable under static loading conditions since the computed values exceed the prescriptive factors of safety. Factor of safety is defined as the ratio of forces resisting slope movement to the forces driving slope movement. Thus, a slope with a factor of safety greater than 1 is considered stable. For engineered slopes, the design engineer or regulations establish minimum acceptable factors of safety greater than or equal to 1 to account for conditions such as variability in the strength of materials comprising the slope. Static factor of safety refers to the factor of safety of a slope under normal loading conditions. Probabilistic and deterministic methods were used in the seismic hazard analysis. The seismic design parameters for the 1,100**-**year return period event for operational conditions were determined using a probabilistic analysis.

2.1.6.1 Tailings Conveyance and Distribution System

Tailings from the flotation circuit would flow by gravity and be distributed to two tailings thickeners operated in parallel. Thickener overflow would flow by gravity to the thickener overflow tank. Thickener underflow would be pumped to the tailings impoundment. A reclaim line would run parallel to the tailings line. The average tailings underflow would be approximately 50 percent solids.

An access road would typically be constructed parallel to, and upgradient from the lines, separated by a berm. The tailings line would be comprised of two **24**-inch diameter pipes. The reclaim line would be an approximately 36-inch diameter high density polyethylene (HDPE) pipe. An emergency spill trench would be constructed downgradient from the lines, to direct any release to adjacent spill ponds. A storm water diversion channel would be constructed upgradient from the road, with the design based on the 100-year, 24-hour storm event.



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Schematic Tailings Storage Facilities

Figure 2.1.15

Coarse tailings material would be required as construction material for the tailings dam. A cyclone classification system would be installed to separate the coarse tailings fraction from the mill tailings stream. The underflow (coarse fraction) from the cyclone classification system would be deposited on the embankment to construct the embankment raises, and the overflow would be deposited into the TSF impoundment as slimes.

2.1.6.2 Foundation Preparation

Prior to construction, the embankment and impoundment foundation surfaces would be cleared and stripped of roots, stumps, and growth media. Growth media would be stockpiled outside of the ultimate impoundment footprints to prevent disturbance and managed according to the growth media salvage protocols in Section 2.1.14.9. The TSF foundation surfaces would be shaped and smoothed prior to liner installation.

Slash from large trees, shrubs, and roots that are encountered during growth media salvage operations would be mechanically separated from growth media as feasible. This slash material would be stockpiled separately from the growth media where it may be burned, used by the public as fire wood, used in final reclamation as habitat enhancements, or hauled off-site to an approved landfill.

2.1.6.3 Embankments

The starter embankment sections for both the South and North TSF sites would be constructed of compacted random fill and rock fill for startup operations. Figure 2.1.16 presents typical embankment sections and details. Cycloned sand raises would be placed above the earthen starter embankment crest to the ultimate height. A toe berm would be constructed at the downstream limits of the ultimate cycloned sand embankment. An embankment underdrain system would be constructed in the downstream sand embankment section with finger drains for routing drainage to a collection pond. A double textured 60-mil LLDPE geomembrane would extend beneath the embankment.

The starter embankment has been sized for approximately eight months of storage capacity, with upstream and downstream slopes of 2.5H:1V. The crest width is designed to be approximately 30 feet wide to accommodate cyclone dam building and vehicle/equipment access as well as practical considerations for traffic and safety during construction.

Cyclone underflow, the slurry that discharges from the bottom of the conical-shaped cyclone, would be directed to the embankment footprint for use in dam construction. These primarily sandy materials would be spread and compacted to provide structural stability for the embankment. Raises above the starter embankment would be constructed without a lined face. Cyclone embankments are widely used in numerous mineral commodity operations on all continents, except Australia. Examples in the western U.S. include Robinson, Morenci, and Bingham Canyon.

2.1.6.4 Tailings Impoundment

The tailings impoundment area, like the embankment, would be constructed in phases. A starter facility with eight months of storage capacity would be initially constructed, followed by subsequent phases of construction completed in order to maintain at least one year's production.

The impoundment area foundation would be cleared, stripped of roots and stumps, stripped of growth media, smoothed, and underlain with a 60-mil LLDPE geomembrane. An 18-inch thick nominal drainage blanket and solution collection piping system would be placed over the geomembrane in the basin and embankment foundation. The drainage blanket material would be graded to prevent piping of fines from overlaying tails.

The solution collection piping system at the base of the drainage blanket would consist of a series of perforated smooth interior corrugated pipes designed to collect and remove solution that emanates from the tailings. The collected solution would be conveyed to the underdrain collection pond.

2.1.6.5 Tailings Pond and Reclaim Water System

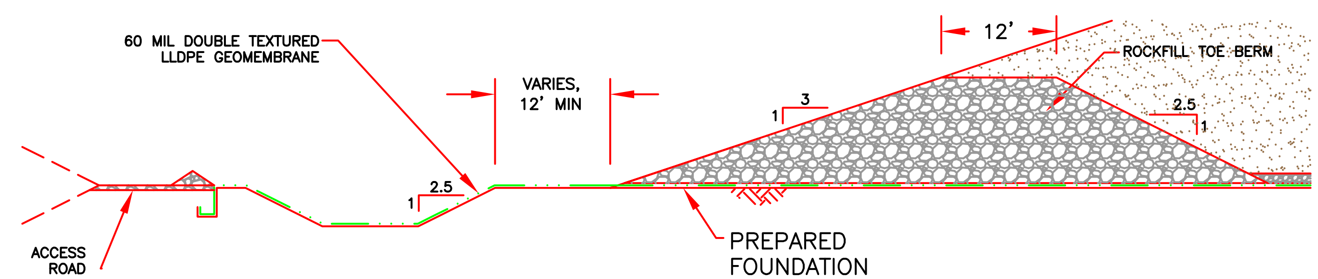
A reclaim trench would be constructed in the most prominent drainage within the impoundment basin to allow confinement of the waters liberated from the slimes in a supernatant pool within a limited area (Figure 2.1.17). The reclaim trench would have a 150-foot bottom width and would be excavated to a depth of 30 feet. The normal depth of the supernatant pool within the reclaim trench would be ten feet. The design features of the reclaim trench would be similar to the tailings basin area except that a retarding layer, consisting of ballasted 40 mil polyvinylchloride geomembrane, approximately 1,000 feet on either side of the center line, which prevents direct communication of ponded process solution with the drain layer.

At the low point of the basin and reclaim trench, the perforated smooth wall corrugated pipe system connects to solid HDPE piping, which would be encased in reinforced concrete through the embankment. The concrete encased pipe would allow a flow path for underdrain solutions from the tailings basin reclaim trench and embankment collection areas to an underdrain collection pond. The proposed concrete encasement would be designed to withstand the load of the ultimate TSF embankment and to protect main collection headers from capacity loss due to pipe deflection.

Water would be reclaimed from the tailings impoundment pond with a reclaim water system consisting of vertical pumps mounted on barges. The water would be pumped to an on shore booster station. The reclaim water system would supply water to the tailings cyclone classification system and the process water tank. Figure 2.1.5 shows the locations of the reclaim line.

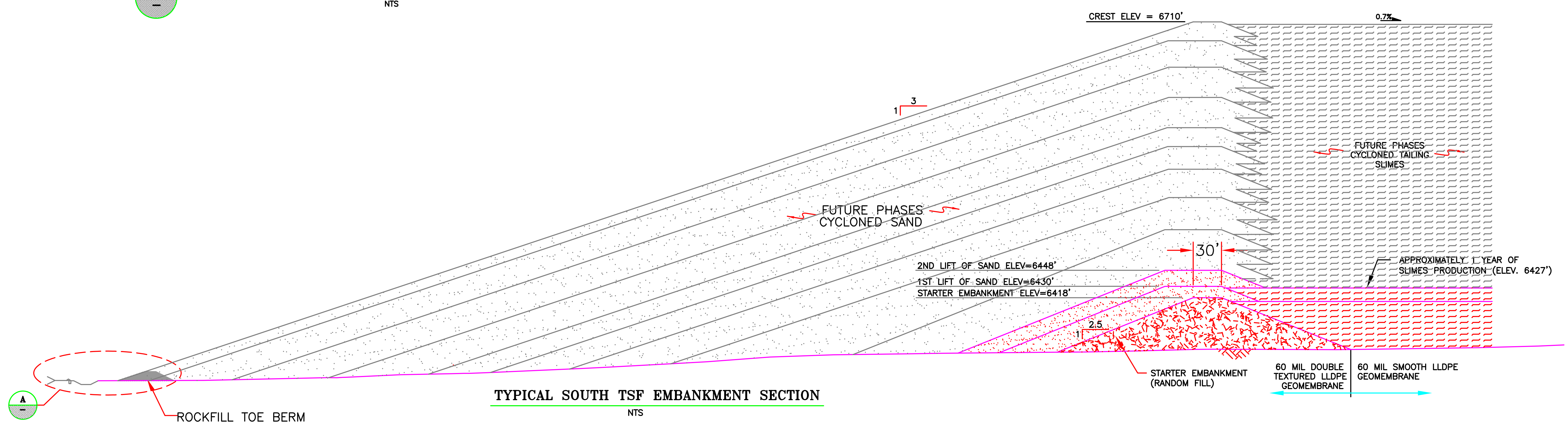
2.1.6.6 Underdrain Collection Pond

Two underdrain collection ponds, Phase 1 and Phase 2, would be constructed at the South TSF, and a single underdrain collection pond would be constructed at the North TSF. The Phase 1 pond would be constructed prior to startup, and the Phase 2 pond would be constructed during the fourth year of operation. The underdrain ponds would collect both underdrain seepage and



ULTIMATE EMBANKMENT TOE DIVERSION CHANNEL SECTION

NTS



TYPICAL SOUTH TSF EMBANKMENT SECTION

NTS

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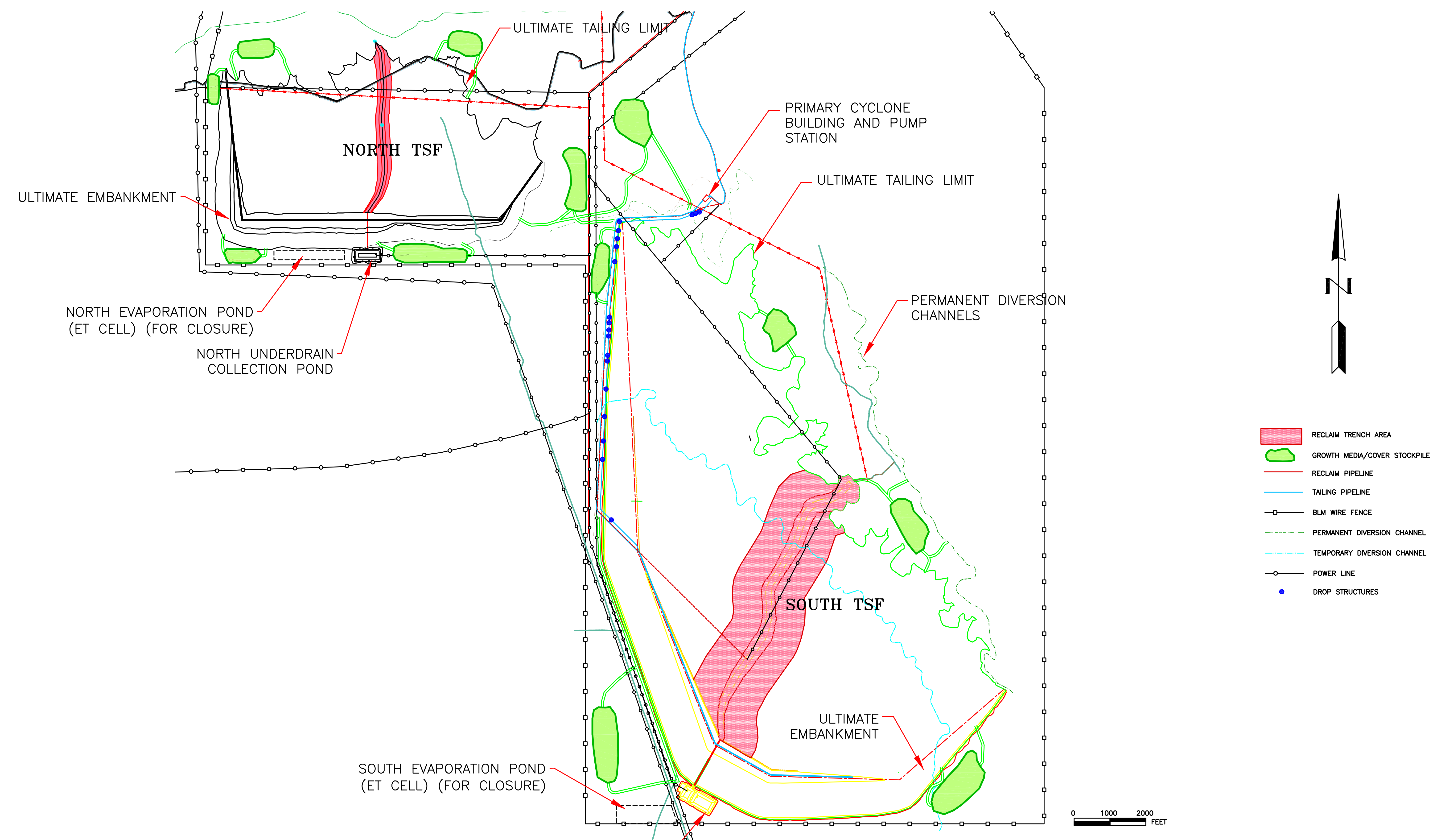
Tailings Storage Facility Typical Embankment Section and Details

Figure 2.1.16



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Tailings Storage Facility and Reclaim Slot Locations

Figure 2.1.17

stormwater runoff from the TSF embankments. The underdrain system would allow for continuous collection of underdrain solution flow from the South TSF site while the North TSF is in operation and the expansion is being constructed.

The Phase 1 pond would be sized to store approximately 4.0 million gallons of operating volume plus 1.0 million gallons of contingency operating volume, 2.1 gallons for the flow generated from 24 hours of drain down, and 6.1 million gallons generated by the 100-year, 24-hour storm event (2.83 inches). The total volume of the Phase 1 pond would be 13.2 million gallons which does not include the capacity for three feet of freeboard. With freeboard the total capacity would be 15.6 million gallons.

The Phase 2 pond would add 33.3 million gallons of capacity to the pond system. The combined capacity of the Phase 1 and Phase 2 ponds would be 4.0 million gallons of operating volume, 6.9 million gallons for 24 hours of drain down from the ultimate TSF basin, and 34.8 million gallons generated by the 100-year, 24-hour storm runoff from the downstream slope of the TSF ultimate embankment. The total volume of both ponds would be 46.2 million gallons. The Phase 2 pond design provides three feet of freeboard and a spillway connecting both ponds.

The design for the underdrain collection ponds includes a primary 80-mil HDPE liner and a secondary 80-mil HDPE liner with a leak collection and recovery system (LCRS) installed between the liners. The LCRS would consist of geonet, perforated four inch diameter corrugated polyethylene pipe, and a gravel sump encapsulated in ten **ounces per square yard (**oz/yd^2**)** geotextile. The sump would be located at the engineered low point of the pond where potential leakage could be collected. An HDPE pipe with a slotted end section would be installed along the slope of the pond between the liners to provide access to the sumps for a submersible pump.

Evacuation of water from the underdrain pond would be via a large-capacity pump system installed in a geomembrane-lined reclaim sump adjacent to the Phase 1 pond. The liner system of the reclaim sump would be the same as underdrain ponds. An independent LCRS would collect and monitor potential leakage through the reclaim sump primary liner. The water reclaimed from the underdrain ponds would be pumped to a collection tank located near the northwest side of the TSF and would be used for dust suppression on the exposed surface of the embankment or returned to the mill for process water.

2.1.6.7 Tailings Characterization and Solution Chemistry

Information on tailings solid and solution chemistry is provided in the Mount Hope Project Tailings Characterization Report (SRK 2008b). Tailings solids have been characterized by acid generation and metal leaching assessment. The predicted chemistry for the tailings indicates that tailings leachate has potential for elevated concentrations of Al, cadmium (Cd), fluoride, and manganese (Mn). **Total dissolved solids (**TDS**)** may also be elevated over time due to evapoconcentration of salts in the supernatant pool. The AGP of the various ore types is directly proportional to sulfide content. In general, acid generation from the tailings would be low. A summary of these characteristics is provided below.

No clear relationship was observed between pyrite and molybdenite abundance, although both generally occur in the tailings. From the mineralogy of the samples, some of the sulfide present in the tailings would be encapsulated in silicate minerals (mainly potassic feldspar and illite). As such they would be less available for oxidation and acid generation; and, as a result, the actual reactivity is likely to be considerably less than that indicated by an empiric approach like ABA. By contrast, carbonate minerals would be present as a cement or matrix mineral in the main fabric of the tailings. With sulfides in the tailings, it is likely that some secondary minerals containing Fe, arsenic (As), Cu, Pb, and Zn would form over time.

Tailings whole rock analysis results indicate elevated concentrations of antimony (Sb), As, Cd, Mo, tin (Sn), tungsten (W), and Zn at three or more times above average crustal composition as defined in Hem (1985). Lithium (Li), Mn, S, and thalium (Th) would be elevated but would be less than three times the average crustal abundance. These elements are enriched within the entire Mount Hope mineralizing system.

The S chemistry is low in the tailings compared to unprocessed ore samples, indicating efficient removal of molybdenite, the most common and abundant sulfide mineral in the deposit. Buffering material is also scarce in the tailings as a result of low carbonate content.

The AGP of the various ore types is not directly related to the rock type or the alteration type but is directly proportional to sulfide content. Typically, tailings samples with S above 0.15 percent (by weight) would be predicted to be net acid generating (NAG), due to the negligible carbonate content. In general, acid generation from the tailings is low due to the low sulfide content of the molybdenite ore and the fact that the majority of sulfide in the ore is molybdenite.

MWMP leachates show lower pH **(potential of Hydrogen)** (acidity) and elevated concentrations of Sb, Cd, fluoride, Mn, mercury (Hg), and nickel (Ni); however, the majority of results show low TDS leachate with **sulfate (**SO_4**)** less than 150 milligrams per liter (mg/L) (see Table 3.3-2).

The humidity cell tests (HCT) and NAG results show similar low reactivity of the tailings, but both tests indicate that over time the tailings would become acidic. This is most likely due to the difference between the reaction rates of the buffering minerals and sulfide oxidation rates in the tailings.

HCT leachate values were compared to NDEP comparative values. Comparison to the NDEP values is not strictly applicable because the tailings impoundment would be a lined, zero discharge facility. However, Al, Sb, Cd, fluoride, Mn, Mo, and SO_4 all show concentrations that would be above comparative values (see Table 3.3-2).

The low amount of metals leached from the HCT confirms the interpretation that the majority of commonly regulated elements would be encapsulated in the tailings solids and would not be available for leaching under natural environmental conditions. Subsequent mineralogical and diagnostic sequential extraction tests of the HCT residues have confirmed the sulfides would be largely encapsulated in coarse grains of quartz and feldspar.

The geochemical evolution of the humidity cells is interpreted to represent the transition over time of the following:

- Rinsing of soluble secondary minerals and sorbed species (mineral species with weak chemical bonds);
- Buffering by secondary minerals; and

- Sulfide oxidation and carbonate buffering.

These reactions would be limited by low sulfide content in the tailings and by the encapsulation of much of the sulfide within gangue minerals. Using a simple mass balance approach to predicting tailings pore water chemistry, the only elements that would be elevated include Al, Sb, fluoride, Fe, and Mn.

The predicted source term chemistry for the tailings indicates that any tailings leachate has potential for elevated concentrations of Al, Cd, fluoride and Mn. The TDS may also be elevated over time due to evapoconcentration of salts in the supernatant pool. However, the overall low sulfide content of the tailings limits the concentration of SO_4 that can be generated from the tailings.

The geochemical characterization work completed indicates that pore water chemistry in the tailings would potentially contain several constituents above applicable standards applied by NDEP. This list includes Al, Sb, fluoride, Fe, and Mn. In addition, As, Cd, Mo, and SO_4 would be also present.

In order to mitigate accumulation of water in the tailings following closure and potential generation of low quality pore water, the tailings would be covered with a low permeability cover of either alluvium or growth medium, or a combination of both, to minimize long-term infiltration into the tailings impoundments. This would effectively reduce the quantity of pore water generated and would reduce the potential environmental risk from the tailings post-closure.

2.1.6.8 Closure

The North and South TSFs would undergo a draindown period, during which time, the tailings would consolidate to allow equipment access for recontouring. Consolidation is expected to take a number of years while seepage is actively evaporated. The final disposition of the draindown fluid would depend on the water quality and other site-specific environmental factors. Possible long-term management scenarios could include direct evaporation or ET. Specifics on the tailings closure are included in Section 2.1.16.8.3.

2.1.7 Project Infrastructure

2.1.7.1 Pipeline Utility Crossing

The tailings and reclaim line configurations described in Section 2.1.6.1 would be applied to the majority of the tailings and reclaim line sections. However, where the tailings and reclaim lines cross the Pony Express Historic Trail, additional **design elements have been provided**. **These additional elements provide protection from potential release of process water while minimizing visual impacts within a 900-foot wide buffer along the Pony Express Historic Trail.**

To minimize visual impacts, these lines would be buried where they are within 450 feet of the Pony Express Historic Trail. As a means of preventing discharge in the event of a line break, the tailings lines would be encased inside an approximately 36-inch diameter pipe and the reclaim line in an approximately 24-inch diameter pipe, and both would be placed below grade through the 900-foot corridor. This double containment would begin at a topographic crest where the pipe grades would begin flowing toward the Pony Express Historic Trail corridor. The lines would continue underground for 450 feet on each side of the Pony Express Historic Trail where they would surface and return to the trench configuration as previously described. This trench would be connected to an emergency spill pond.

In the event of line rupture within this area, the outer containment pipe would be filled with tailings or reclaim water and would discharge where the lines surface and report to the emergency spill pond. Once a leak is detected, the lines would be shut off, repaired, and reburied. The emergency spill pond would be cleaned and materials hauled to the tailings impoundment. No storm water diversion channels would be constructed at the low point where the pipes would be buried; flood waters would be allowed to flow over the road and buried lines. Lines would be buried deep enough to ensure they would not be exposed through scouring during flood events. The emergency spill pond would be designed to contain the 100-year, 24-hour storm event.

2.1.7.2 Electrical Power and Generator Backup

The Project would require up to 75 megawatts (MW) of power. EML would construct an approximately 24 mile long 230-kV powerline within and adjacent to the existing 500-foot wide Falcon-Gondor utility corridor as shown on Figure 2.1.7. The proposed powerline would originate at Mt. Wheeler's Machacek **s**ubstation, located approximately **0.5 mile north of the Eureka Townsite boundary**. **The specific agreements for providing energy and maintaining the 230-kV powerline have not been finalized. However, these** services that are specific to EML's requirements would be fully funded by EML.

The existing Machacek Substation is fenced (approximately 8.25 acres), and would be upgraded to accommodate the transmission of power for the Project. Upgrades would consist of **a** ring bus, 230-kV circuit breakers, 230-kV air break switches, associated structures, and concrete foundations. The Machacek Substation upgrades, including **a** full ring bus design, would allow isolation of the proposed facilities from other consumers for line faults. This arrangement would likely improve the service reliability for the Eureka community, including Diamond Valley, and the power that would be provided for the Project would not affect the sufficiency of power currently provided to the area.

The Mount Hope 230-kV powerline would run parallel to the existing Falcon-Gondor powerline for the majority of its routing, but would have its own ROW **(first a temporary construction ROW and then a separate ROW for the operation of the powerline)**. The power poles would be steel structures with a rust stained surface, similar to the poles of the existing 345-kV line. These poles would be placed approximately 150 feet (centerline to centerline) from the existing Falcon-Gondor powerline. The power would be transmitted in three phases necessitating three separate conductors, plus one static line. Based on Avian Power Line Interaction Committee recommendations, adequate spacing between conductors would be implemented. Appropriate **applicant committed practices**, including perch deterrents, would be included in the design as identified by the BLM through the POD (Electrical Consultants, Inc. [ECI] 2008). The 230-kV line would enter the Project Area at the southern boundary near the South TSF and tie into a substation located in the mill area (Figure 2.1.5).

The existing Falcon-Gondor powerline would be rerouted as a result of constructing the North TSF, which would not occur until more than 30 years into mine operations. The powerline location could vary based on detailed engineering.

The fresh water wells would require a separate 24.9-kV line stepped down to a voltage compatible with the pump system. This powerline would originate at the mill substation and follow the routes shown on Figure 2.1.7. **Within the greater sage-grouse lek two-mile buffer areas, the powerline would be constructed below ground. To further protect greater sage-grouse, the wellfield powerline may also be buried in areas outside of the two-mile buffer around active leks. However, as currently designed, the powerline outside of these areas would be constructed above ground. Above-ground powerlines would be equipped with perch deterrents.**

Two backup diesel generators, each capable of producing 1,000 kilowatt (kW) at 4,160 volts, would be located **in the vicinity** of the mill **and roaster**. These generators would provide sufficient power to **safely shut down the** plant in the event of a power outage. Final design for back up power and sizing of the generators is pending detailed design.

2.1.7.3 Site Layout and Support Facilities

Proposed support facilities would include access roads, laydown areas, maintenance and other support facilities. Figure 2.1.8 presents the site layout.

2.1.7.3.1 Support Facilities

Support facilities would include the mine and mill maintenance shops, laboratory, warehouse, administration buildings, and security buildings. These buildings would typically be insulated pre-fabricated or pre-engineered steel buildings. Heat would be provided by propane gas forced air **or electrical heaters** in the office and personnel buildings and propane gas radiant heat in the maintenance bays. Gas would be provided from individual propane tanks adjacent to each building. Air conditioning would be provided by electrical cooling units.

The truck shop would include five maintenance bays (three large bays and two intermediate to small bays) to support mobile equipment maintenance. In addition, the truck shop would have offices, a lunch room, locker rooms with showers, and crew meeting rooms. An enclosed truck wash facility would be located adjacent to the truck shop. Stationary water monitors would be used to clean mobile equipment. Wash water would be directed to a settling basin where water and solids would be separated. Water would be treated with an oil water separator and re-circulated. Solids collected from the settling basin would be tested and handled as petroleum contaminated soil, if necessary.

The mill maintenance building would house the process maintenance shops, office space, and the warehouse. An outside fenced storage area would be located adjacent to this building.

The laboratory would be located southeast of the roaster facility as shown on Figure 2.1.8. The laboratory would include separate areas for sample preparation, wet analysis, a metallurgical laboratory, a balance room, and offices.

Administration offices would be located near the security building as shown on Figure 2.1.8. These offices would house the reception area, offices for administrative staff, and meeting rooms.

The safety/security building would be located on the main access road approximately 300 yards from the administration building as shown on Figure 2.1.8. A gatehouse manned by security guards would be located next to the safety/security building. The safety/security building would include a first aid clinic and a meeting/training room. An ambulance and fire truck, staffed and operated by mine personnel, would be stationed at the safety/security building to respond to accidents and incidents. A helipad would be located nearby in the event a medical air evacuation is needed.

Septic systems and leach fields would be installed at the mill, truck shop, administration building, laboratory, and mill maintenance buildings for sewage. The biosolids would be pumped as necessary by a licensed septic waste hauler and transported to a licensed repository.

In the process, maintenance, warehouse, laboratory and administration areas, lighting would have screens to prevent the bulb from shining up or out, and would be located to avoid light shining onto adjacent lands as viewed from a distance. Within these areas lighting fixtures would be hooded and shielded, face downward, be located within soffits and directed on to the pertinent site only, and away from adjacent parcels or areas. Buildings would be painted in earth tones so they are compatible with the natural environment.

2.1.7.3.2 Petroleum Contaminated Soils

EML would submit a Petroleum Contaminated Soil Management Plan to the Nevada BMRR and BLM, describing how petroleum contaminated soils would be treated or disposed of at the mine. EML may also elect to ship petroleum contaminated soils off site to an approved disposal facility.

2.1.7.4 Sediment Control

Sediment would be controlled using best management practices (BMPs) during construction and operation. Management practices may include, but would not be limited to, diversion and routing of surface storm water using accepted engineering practices, such as diversion structures, sediment collection ponds, and rock and gravel covers.

Surface storm water from the plant yards would be directed through permanent collection channels to one of two collection ponds with capacities of approximately 6.5 million gallons and 500 thousand gallons. The collection ponds would be monitored in accordance with the Fluid Management and Monitoring Plan included in the Water Pollution Control Permit (WPCP) application (EML 2009a). Sediment removed from the collection ponds would be **used as fill or growth media, or placed in the WRDF** or in the TSF.

Storm water that has not contacted mining components would be diverted around the process area through permanent diversion structures.

The permanent diversion and collection structures would be sized for the 100-year, 24-hour storm event with additional capacity to allow less frequent maintenance and would have the capacity to safely pass the inflow design flood peak flow during operations and at closure.

Diversion channels associated with the WRDFs would be constructed to collect and divert non-impacted waters. Collection channels would be constructed to collect and contain potentially impacted water from within the facility footprints.

Permanent collection channels (Collection Channels No. 1 and No. 2) associated with the PAG WRDF would direct runoff to geomembrane lined ponds (Phase 1 and Phase 2), respectively located at the southern portion of the LGO Stockpile. The collection channel foundation surfaces would be prepared and lined with geomembrane. Other diversion channels would divert storm water that has not contacted mining components from the natural ground away from the PAG WRDF and the LGO Stockpile area. These diversion channels would be lined with geomembrane and riprap, and would be removed with the construction of the stockpiles beyond Year 5. All of the channels would be designed to carry estimated peak flows associated with the 100-year, 24-hour storm event.

Diversion and collection channels associated with the Non-PAG WRDF would be designed in stages around the footprint of the WRDF. They would be designed to convey the peak flow associated with the 100-year, 24-hour storm event. Most of the channels would be lined with a 60-mil HDPE geomembrane with outlet segments lined with riprap.

Riprap dams for the WRDFs would be associated with the PAG WRDF permanent collection channel and would be designed to block a portion of the channel so that sediments would be stored behind them in a basin. The sediment basins would be approximately **twenty** feet by ten feet and the dams would be approximately four feet high.

Sediment control structures would be located at the toe of each Non-PAG WRDF in drainages located at the outfall of the Non-PAG WRDF temporary diversion channels. They would be comprised of a rock berm placed across the drainage. The structures would be sized to contain the runoff volume generated from a 25-year, 24-hour storm event. Sediment control structures would be added or moved in stages with the growth of the WRDF.

Surface water diversion channels associated with the TSF would be constructed to direct surface water away from the tailings impoundments through channels and culverts. The channels would be both temporary and permanent. Permanent channels would remain throughout the life of the facility, and temporary channels would be removed with the construction of the phased expansions to the impoundment basin. At the time of construction of the TSFs' starter embankments, permanent diversions would be constructed at the limits of the planned ultimate footprint. This channel would intercept surface water from the catchment area located above the proposed TSF site. Temporary diversion channels would be placed within the ultimate tailings basin footprint to limit the runoff reporting to the tailings impoundment from the watershed that is between the permanent diversion channels and the active tailings area.

Sediment control structures associated with the TSF would be placed at several locations in drainages downstream of the TSF. The placement of sediment control structures for the North TSF would be determined closer to the date of construction.

2.1.7.5 Borrow Areas

Borrow areas would be located within the facility footprints. Borrow sources would be required for prepared subgrade materials, drainage materials, pipe bedding materials, road surfacing materials, retarding layer materials, closure cap materials, growth materials and riprap. If these areas would be unable to provide sufficient quantities of borrow material, other sites outside of the facility footprints would be identified and tested to determine the material properties and amount available, which would require a revision of the Plan and be subjected to additional environmental analysis. Depth of potential borrows would be expected to be between five and **twenty-five** feet. In cases where a borrow source would be constructed outside of a planned facility, the borrow area would be graded to drain. Borrow areas may be revisited over the mine life. Areas outside of the facility footprints that would be dormant for over 12 months would be seeded with an interim seed mix to control dust and erosion and to prevent the encroachment of invasive, nonnative species.

2.1.7.6 Fencing

EML would construct approximately 22 miles of BLM approved barbed wire fencing to prevent livestock and wild horses from entering the open pit, WRDFs, and TSFs. This fence would also limit and control public access to the Project Area. In areas where a higher level of security would be needed, eight-foot high chain link fences would be erected. Eight-foot chain link fences would be constructed around all collection ponds. Gates or cattle guards would be installed along roadways within the Project Area, as appropriate. **In the event that cattle enter the fenced area, EML would attempt to identify the brand and contact the owner. If the brand could not be identified, EML would notify grazing permittees adjacent to the Project. EML would assist in moving these animals out of the fenced portion of the proposed Project Area and would not harass these animals.** In areas where greater sage-grouse are likely to be present, perimeter fences would be equipped with flagging/flight diverters to increase visibility.

Figure 2.1.5 shows the approximate location of the BLM approved barbed wire fencing. Figure 2.1.8 shows locations of the eight-foot chain link fences. The fences would be monitored on a regular basis and repairs made as needed. BLM would be contacted immediately in the event that wild horses enter the Project Area. EML would assist, as requested, in moving these animals out of the Project Area.

2.1.8 Haul and Access Roads

Haul roads would be nominally constructed with an average 120-foot wide running width and a maximum gradient of approximately ten percent. The roads would be constructed according to MSHA standards, which include a berm at least the height of half the wheel height of the largest vehicle utilizing the road. Runoff from haul and access roads would be collected and routed to sediment retention ponds as necessary.

Secondary roads would generally be approximately 20 feet in width. These roads would also be bermed in accordance with MSHA regulations. BMPs would be used where necessary to control erosion.

2.1.9 Access and Transportation

A primary access road about 32 feet wide (24 feet running surface width plus four-foot wide shoulders) would be constructed to connect the proposed Project Area with SR 278. Following Project construction, EML may pave this primary access road.

To enhance safety, turn and acceleration lanes would be constructed within the existing ROW for SR 278 at the Project entrance. A deceleration/right turn lane would be constructed for southbound traffic beginning north of the Project turnoff and would be extended south of the turnoff to provide an acceleration lane for the southbound traffic. A deceleration/left turn lane would be constructed for northbound traffic beginning south of the Project turnoff, and an acceleration lane would be constructed beginning at the Project turnoff and extending north.

To remove mud and dirt from highway vehicles, an oversized cattle guard system would be installed and maintained on the main access road. EML would install a vehicle wash to reduce the amount of mud and dirt that would be tracked onto SR 278 if, in cooperation with Eureka County, area residents, the BLM, and the Nevada Department of Transportation (NDOT), it is determined to be necessary.

A secondary Project access road would be constructed one mile to the north of the primary access road, principally for the delivery of equipment and materials.

Access into the Project would be limited to the single entry point at the main gate where the access road from SR 278 would reach the Project perimeter fence. No public access to the Project from the Kobeh Valley side would be provided. However, once inside the Project boundaries, EML personnel and authorized contractors would be allowed to enter Kobeh Valley from the west side of the Project through secured gate(s) to conduct Project-related activities in the well field and other areas as needed, and to re-enter the Project through the secured gate(s).

During construction, materials transported to the Project would include gravel currently stockpiled at the privately owned Romano Ranch that would be used as aggregate in concrete. The Romano Ranch is located in Diamond Valley, and aggregate would be hauled by truck approximately seven miles on the Sadler Brown gravel road to the intersection of SR 278, then north approximately three miles to the main access road.

Transportation activities associated with the Project would include construction of facilities that would result in associated traffic. The amount of traffic has been estimated based on the amount of equipment and materials that would be delivered to the site and the number of construction employees that would travel to the site. The estimated traffic, on a monthly, round-trip basis, is outlined below and presented in Figures 2.1.18, 2.1.19, and 2.1.20. Figure 2.1.18 shows the total estimated traffic associated with the Project construction. Figure 2.1.19 shows the estimated truck traffic associated with the Project construction. Figure 2.1.20 shows the estimated car, pickup truck, van, and bus traffic associated with the Project construction.

The construction period is defined as the 24 month-long period of construction that would be necessary to allow Mo production from the process facilities. The start of construction would be dependent on the time at which a favorable ROD would be obtained, plus time (30 to 90 days) for the Project financing to be finalized and the funds to be accessible. Based on current information, construction beginning in March 2013 and Mo production in March 2015 is planned. Thus, the 24-month construction period, currently anticipated at March 2013 through February 2015, is represented by Months 4 through 27 on the following figures. Some equipment and materials would be transported to, and staged at, the Project Area prior to start of construction. Additionally, construction activities would take place after Mo production begins. To provide a complete and conservative assessment of traffic impacts, traffic associated with pre-construction deliveries and post-start-up construction is included in the estimate and depicted in the figures.

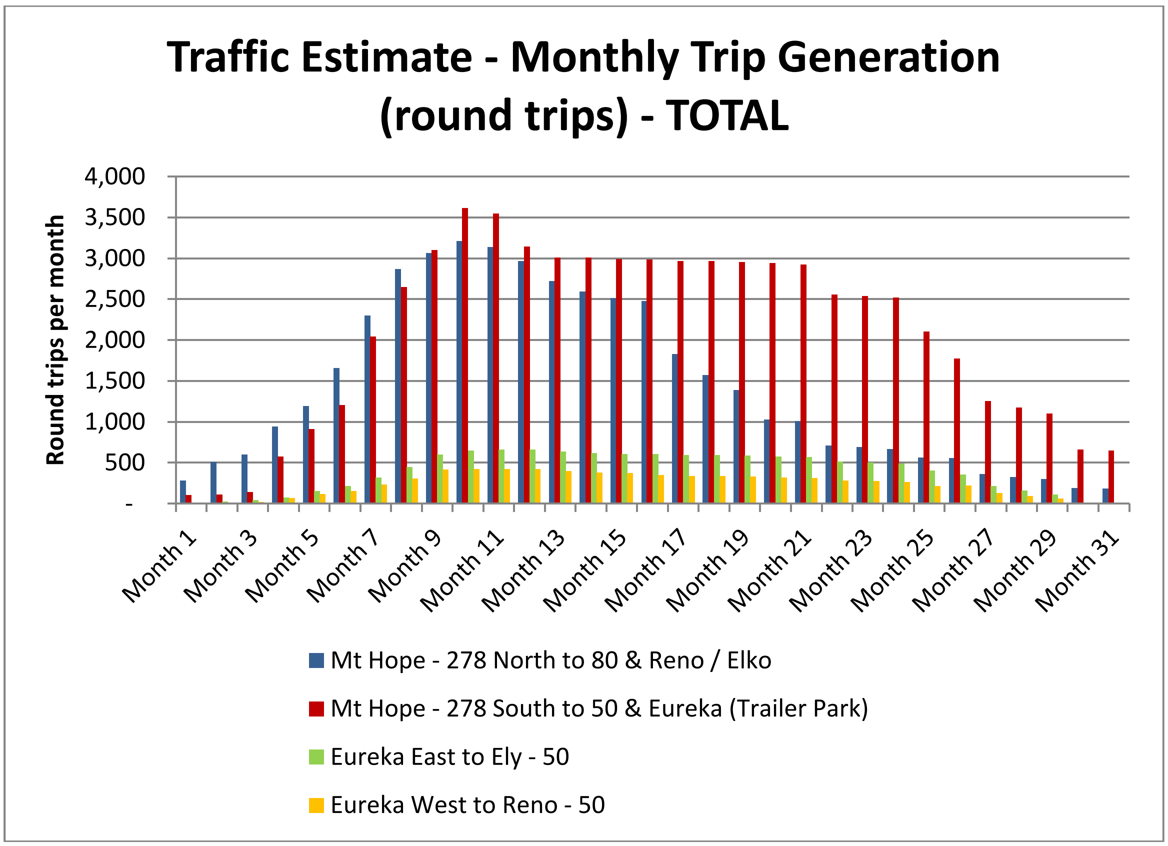


Figure 2.1.18: Estimated Total Project-Related Construction Traffic

Round trips are segregated on the basis of the likely point of origin. Traffic that would originate from points south of the Project is segregated into trips that would originate at points west of the U.S. Highway 50 - SR 278 intersection, trips that would originate at points east of the U.S. Highway 50 - SR 278 intersection, and trips that would originate in Eureka or Diamond Valley (traffic identified in the graphs as originating in the town of Eureka includes traffic that would originate in Diamond Valley).

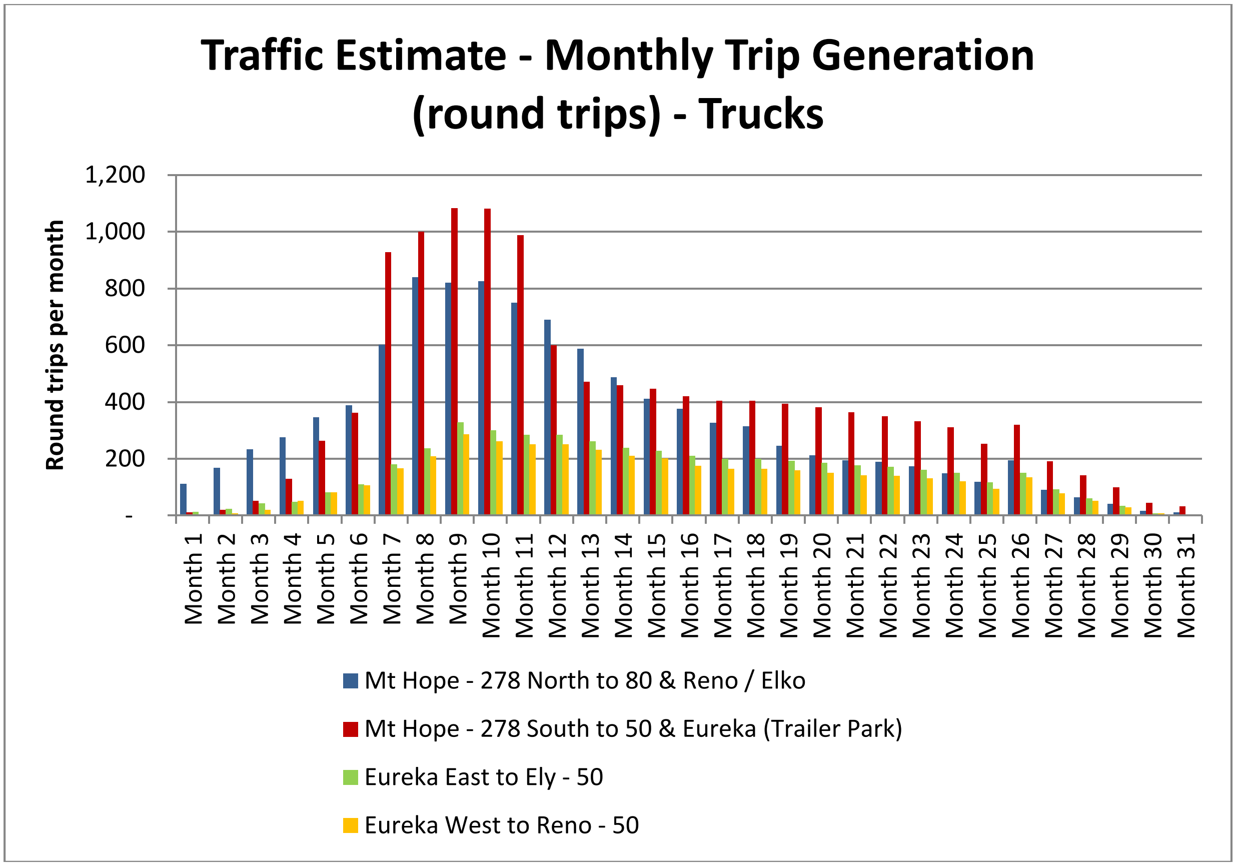


Figure 2.1.19: Estimated Truck Project-Related Construction Traffic

The majority of truck traffic would originate from the north, while the majority of traffic originating from the south would be associated with commuting construction labor (busses, vans, pickup trucks, and autos). A significant portion of truck traffic identified as originating in Eureka consists of aggregate that would be hauled from Diamond Valley, and these trucks would not actually travel through the town of Eureka. Trips originating at points east of the U.S. Highway 50 – SR 278 intersection would travel through the town of Eureka.

Estimated peak traffic counts are projected to occur in Month 10 of construction, currently expected to be September 2013. During this month, the estimated traffic would include approximately 3,600 round-trips (trucks and commuting labor) from Eureka (and Diamond Valley), approximately 3,200 round-trips from the I-80 corridor, approximately 650 round-trips from the east on U.S. Highway 50 and approximately 400 round-trips from the west on U.S. Highway 50.

For the Project-related operational transportation there would likely be truck, car, pickup truck, van, and bus traffic. The truck traffic would result in approximately 26 daily truck trips, including the toll roasting. In addition, there would be an undetermined increase in passenger (car, pickup, van, and bus) vehicle trips per day on SR 278. Some Project-related traffic would utilize U.S. Highway 50.

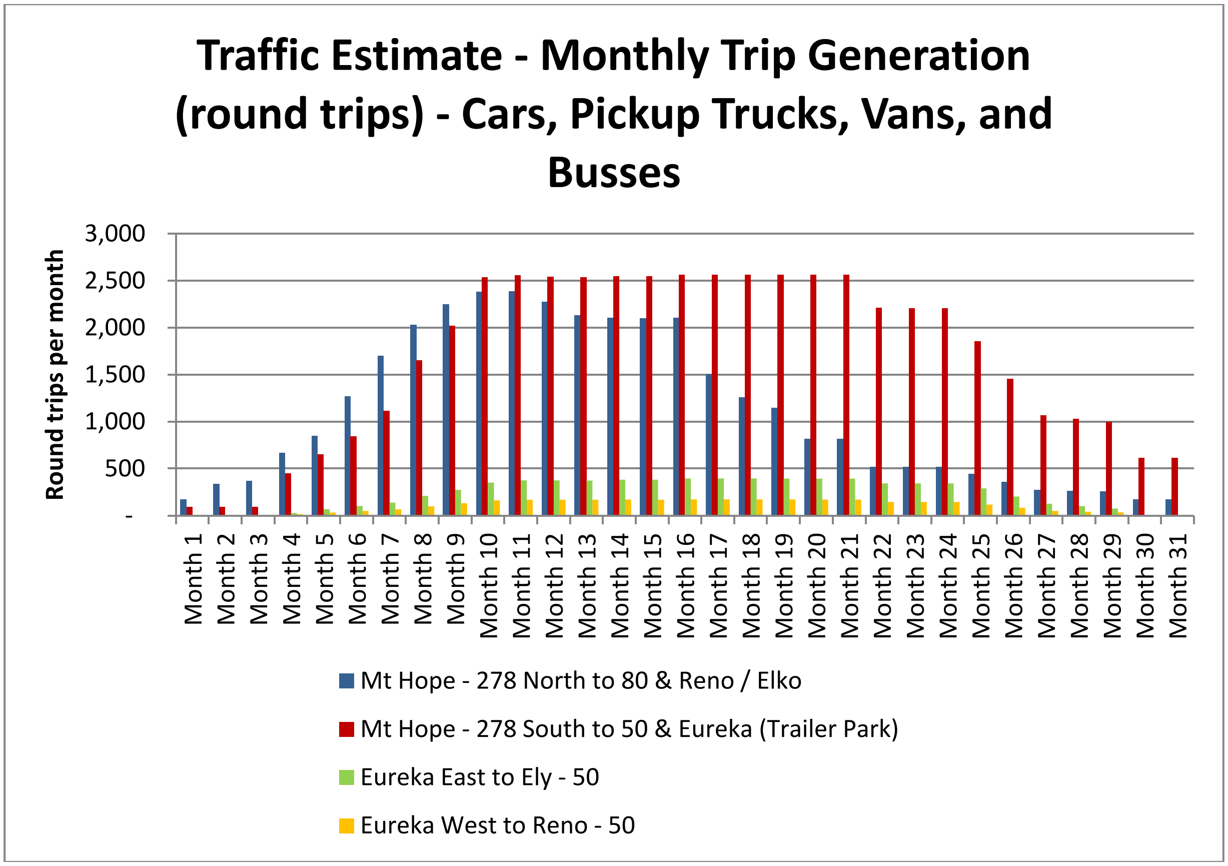


Figure 2.1.20: Estimated Car, Pickup Truck, Van, and Bus Project-Related Construction Traffic

2.1.10 Safety and Fire Protection

The Project would operate in conformance with all MSHA safety regulations (30 CFR 1-199). Site access would be restricted to employees and authorized visitors. Fire protection equipment and a fire protection plan would be established for the Project Area in accordance with State Fire Marshal standards.

A separate fire suppression water system would be installed to provide service to the buildings. Fire hydrants would be placed at regular intervals around the buildings. The buildings would have sprinkler systems and hand held fire extinguishers available in accordance with MSHA regulations and industry standards. A fire truck would be located on site for use in structure and equipment fires. Employees would be trained in the use of hand held fire extinguishers and alarm systems.

EML or its contractor would have emergency medical personnel on site during construction. EML would have emergency medical personnel on site during operations and would maintain a licensed ambulance with licensed driver for transportation in the event of an incident that required this level of attended emergency transportation. However, should a medical emergency occur, it is recognized that, depending on the specifics, Eureka

County Emergency Medical Services (EMS) may be contacted for assistance with medical response or transportation.

Emergency response vehicle**s** and a trained mine rescue team would respond to fire and medical emergencies at the site. An ambulance would be located at the safety/security building to respond to on-site emergencies. A separate radio frequency or emergency protocols would be put in place for use. A helipad located near the safety/security building would be available for use by emergency aircraft. EML **intends to have agreements with the Eureka County Fire and Ambulance Service regarding mutual assistance, and has initiated discussions with this entity regarding emergency response cooperation.** EML anticipates that local and regional agencies would maintain sole responsibility for response to incidents outside of the Project boundary. Mine rescue and fire response teams may be available to assist with off-site response if requested by agency personnel or others.

2.1.11 Chemical Use and Management

2.1.11.1 Fuels, Lubricants, and Reagent Storage

A satellite fuel storage depot would be located at the truck shop. This fuel depot would include gasoline and diesel above ground tanks for fueling of small and intermediate vehicles. Secondary containment would be designed to hold 110 percent of the volume of the largest tank. Fuel would be delivered via tanker truck. Drivers off-loading fuel would be certified and trained. Appropriate hose fittings would be located within the containment to collect spilled fuels. A sump would be located at one end of the containment so spilled fuels could be pumped from the containment using a portable pump.

Other lesser quantities of hydrocarbons and regulated materials would be located at the truck shop, warehouse, and mill area. These would be kept indoors in proper storage and secondary containment systems. Table 2.1-5 shows the fuels and reagents that would be used, approximate quantities to be stored, average usage rates, and the numbers of monthly shipments. The total monthly truck trips to deliver chemicals to the Project would be approximately 574, or approximately 19 per day.

Table 2.1-5: Monthly Shipments of Reagents, Volumes, and Shipments

Reagent	Storage	Amount/ Delivery	Trucks/ Month	Approximate Consumption per Day
Diesel Fuel (for off road use)	Three 100,000-gallon tank	6,600 gallons	185	40,000 gallons
Gasoline	10,000-gallon tank	6,600 gallons	2	400 gallons
Highway Diesel	10,000-gallon tank	6,600 gallons	2	400 gallons
Automatic Transmission Fluid	5,000-gallon tank	1,000 gallons	1	30 gallons
Engine Oil	5,000-gallon tank	2,000 gallons	2	125 gallons
Engine Oil Spare	5,000-gallon tank	2,000 gallons	2	125 gallons

Reagent	Storage	Amount/ Delivery	Trucks/ Month	Approximate Consumption per Day
Hydraulic Fluid (synthetic)	5,000-gallon tank	1,000 gallons	1	30 gallons
Gear Oil	5,000-gallon tank	1,000 gallons	1	30 gallons
Antifreeze	5,000-gallon tank	1,000 gallons	1	30 gallons
Used Oil	7,500-gallon tank	1,000 gallons	1-	30 gallons
Used Antifreeze	7,500-gallon tank	6,000 gallons	1	125 gallons
Propane	Three 30,000-gallon tanks	10,000 gallons	11	3,600 gallons
Ammonium nitrate	Three 70-ton silos	38 tons	41	52 tons
Ammonium Hydroxide	24,000 gallons	2,800 gallons	6	1,000 gallons
Quicklime-Mill/Leach	Two 500-ton silo	22 tons	205	150 tons
Milk of Lime Mixing Tanks	Two 30,000-gallon tanks	-[1]	-	160,000 gallons
Diesel Fuel - Flotation	Two 25,000-gallon tank	6,600 gallons	17	3,600 gallons
Methyl Isobutyl Carbinol (MIBC)	20,000-gallon tank	6,600 gallons	2.5	540 gallons
Fuel Oil No. 2 / MIBC Blend	20,000-gallon tank	-	-	490 gallons
Ferric Chloride at 40 percent weight	Two 25,000-gallon tank	3,500 gallons	51	6,000 gallons
Hydrochloric Acid at 35-40 percent weight	10,000-gallon tank	3,000 gallons	2	165 gallons
Pine Oil	25,000-gallon tank	6,150 gallons	4.5	900 gallons
Flomin D-910 (depressant)	20,000-gallon tank	22 tons per truck	1	750 pounds
Sodium Meta-Silicate	75-ton dry bulk silo	22 tons	11	7.5 tons
Sodium Meta-Silicate Mix Tank	25,000-gallon tank	-	-	5,000 gallons
Sodium Meta Silicate Distribution Tank	25,000-gallon tank	-	-	5,000 gallons
Witconate 90	200-pound fiber drums	96 drums per truck	2	1,250 pounds
Witconate 90 distribution tank	3,000-gallon tank	-	-	5,000 gallons
Antiscalant	7,000-gallon tank	5,000 gallons	1	120 gallons
Flocculent	1,650-pound supersacks	24 supersacks per truck	2	1,800 pounds
Flocculent mix tank	15,000-gallon tank	-	-	135,000 gallons

Reagent	Storage	Amount/ Delivery	Trucks/ Month	Approximate Consumption per Day
Flocculent distribution tanks	Two 25,000-gallon tanks	-	-	135,000 gallons
Iron oxide	60-ton dispensing bin	20 tons	6	3.9 tons
FerroSilicon (50 percent)	60-ton dispensing bin	20 tons	12	7.7 tons
Aluminum	30-ton dispensing bin	20 tons	1	0.7 tons
CaAlumina	30-ton dispensing bin	20 tons	0.5	0.3 tons

[1] No deliveries associated with these tanks. They are mix and distribution tanks only.

A portable fuel storage and dispensing system may be used in the pit at the later stages of pit life to shorten the distance mine equipment would have to travel to fuel. This system would contain diesel fuel and gasoline tanks in secondary containment and a diesel powered generator to power the dispensing units. The system would be emptied and moved periodically by trailer as needed.

Lubricants and antifreeze would be managed and stored in the area as required by the MSHA and other state and federal regulations. Lesser quantities of solvents, paints, and other materials would be stored at the truck shop and managed in the same manner.

2.1.11.2 Reagents and Chemicals

Most reagent tanks would be located outside of the mill building in secondary containment as shown on Figure 2.1.8. Mix and distribution tanks for the sodium metasilicate, Witconate 90, and the flocculant would be located indoors near the mill in secondary containment. Other reagents include sodium carbonate, sodium hydroxide, ammonia, flocculants, and antiscalant.

Secondary containment would be sized to contain 110 percent of the volume of the largest tank or tanks in series. Spills would be handled according to state and federal regulations. Spills would report to a sump, the contents of which could be pumped back into a tank or into the process. Outdoor tanks and lines would be insulated and heat traced as necessary to protect against temperature changes. Ferric chloride, ammonium hydroxide, and hydrochloric acid would be stored adjacent to the ferric chloride leach facility in secondary containment with the capacity to contain 110 percent of the largest tank. The ammonium hydroxide would be stored in an area separate from the ferric chloride and hydrochloric acid. The floors would be concrete and covered with a sealant to prevent discharge to the environment. Spills would report to separate sumps, the contents of which could be pumped back into the tanks or returned to the process. Spills would be handled according to state and federal regulations. Table 2.1-5 presents the reagents that would be used, the volumes that would be stored on site, and the number of shipments anticipated per month. These estimates may vary depending on the metallurgical conditions encountered during operations. EML may elect to substitute reagents with similar chemical compositions for those listed if greater flotation recovery or more efficient gas scrubbing can be realized.

Reagents used in the analytical and metallurgical test procedures would be stored at the laboratory and generally include small quantities of nitric acid, sulfuric acid **(H_2SO_4)**, hydrochloric acid, hydrofluoric acid, and sodium hydroxide. Small quantities of other reagents may be used periodically. Lab sinks would be designated either as an "acid" sink or a "base" sink. These sinks would drain to tanks within containment. The tank contents would be neutralized on a regular basis. The neutralized waste would be disposed in accordance with applicable regulatory requirements.

2.1.11.3 Waste Disposal Management

Used lubricants and solvents would be characterized according to the Resource Conservation and Recovery Act (RCRA) requirements and would be stored appropriately. EML has obtained a Hazardous Waste Identification Number from the Environmental Protection Agency (EPA). The mine is expected to be in the "conditionally exempt small quantity generator" category as defined by the EPA. Used solvents are the only identified potential hazardous wastes at this time. EML would institute a waste management plan that would identify the wastes generated at the site and their appropriate means of disposal.

Used oil and coolant would also be stored at the maintenance building and truck shop in secondary containment. The materials would be either recycled or disposed of in accordance with state and federal regulations. Used containers would be disposed of or recycled according to federal, state, and local regulations.

Solid waste generated by the mine and process departments would be collected in dumpsters near the point of generation. Industrial solid waste would be disposed of in an on-site Class III landfill in accordance with NAC 444.731 through 444.737. A training program would be implemented to inform employees of their responsibilities in proper waste disposal procedures.

The Class III landfill would be located near the edge of the southern portion of the Non-PAG WRDF, as shown on Figures 2.1.1 and 2.1.3. A trench would be excavated parallel to and at a safe distance from the face of the advancing toe of the WRDF. The advancing WRDF would eventually cover the trench, which would be replaced by other trenches in sequence. When the waste rock storage lift has reached its extent, trenches would be excavated in the subsequent lifts.

EML would have a trained response team at the site 24 hours per day to manage potential spills of regulated materials at the site. Response for transportation-related releases of regulated materials bound for the site would be the responsibility of the local and regional agencies. However, where appropriate, EML may assist with response to off-site incidents, including providing resources, based on agency requests.

2.1.11.4 Explosives Handling

Explosive agents would be purchased, transported, stored, and used in accordance with the Department of Homeland Security; Bureau of Alcohol, Tobacco, and Firearms provisions; and MSHA regulations. The primary explosive used would be ANFO. Ammonium nitrate prill would be stored in a silo, while explosive agents, boosters, and blasting caps would all be stored within secured areas.

2.1.12 Exploration

Exploration activities would continue within the Project boundary in order to identify new reserves or expand existing reserves. Activities would consist of drill road and pad construction, surface sampling, trenching, bulk sampling, and drilling using both reverse circulation and core rigs. Exploration activities may also include water exploration and monitor well installation.

Exact locations of the exploration disturbance have not been determined. However, it is anticipated that up to 50 acres of temporary surface disturbance could be created for exploration activities outside of the identified areas of surface disturbance within the Project Area. This exploration work within the Project boundary would occur after the BLM reviews and concurs with EML's phased exploration work submittal that identifies the specific surface disturbance to ensure that all identified sensitive resources are managed in accordance with the Plan approval. The roads and pads would be sited to avoid identified cultural resources and the Pony Express Historic Trail **in accordance with the approved treatment plan.**

2.1.13 Work Force

Construction would be performed by contractors over an approximately 18- **to 24-**month period with an estimated 400 personnel on average and an estimated peak of 615 personnel. During this same time, pre-stripping would be performed to remove overburden within the area of the initial pushback of the open pit. The operations workforce would include mine equipment operators, mill operators, mining and mill maintenance mechanics, administrative personnel, technical professionals (metallurgists, engineers, geologists, etc.) security staff, and other miscellaneous employees. **Employment for the Project would average about 370, and reach a maximum of about 455**. Table 2.1-6 presents the projected average labor requirements.

Table 2.1-6: Average Project Labor Personnel Requirements[1]

Category		Start of Construction	Beginning of Mining	Full Operations
Administration	Salary	9	9	12
	Hourly	10	14	20
Mine Operations	Salary	19	23	23
	Hourly	0	47	126
Mine Maintenance	Salary	2	12	12
	Hourly	21	115	66
Process Operations	Salary	2	2	9
	Hourly	2	7	74
Total Vacation, Sickness, Absence Allowance		1	9	28
Total		**66**	**238**	**370**

[1]These numbers are estimates of the number of individuals, and actual numbers may vary.

The mine and processing plants would be scheduled to work 365 days per year. In general, the operations would occur over two shifts per day, 12 hours per shift; however this schedule may vary for select crews depending on their work assignments. Due to the remoteness of the mine site and the duration of the mine life, EML plans to provide buses to transport employees residing in Elko, Carlin, Eureka, and other points in the region to and from the mine. Bus round trip transportation from Elko would average four trips per day and peak at five trips per day. Bus round trip transportation from Eureka would average two trips per day and peak at three trips per day.

2.1.14 Applicant Committed Practices

EML would commit to the following practices, to prevent undue or unnecessary degradation during the life of the Project. These practices, described briefly below, would be considered part of the operating procedures.

2.1.14.1 Socioeconomic Practices

EML proposes to meet with Eureka County on a regular basis to provide Project updates. These updates would be intended to provide information related to employment numbers, housing plans, transportation plans and other aspects of the Project that would allow Eureka County to more effectively prepare for changes to the community and the potential for increased demands on county-provided services. In addition, EML would provide updates on taxes paid to state and local governments to allow a clear assessment of the impact on county services, in comparison to the revenues made available to deliver those services. EML would work with County staff to quantify potential gaps in revenue versus cost for services, should they occur. Further, EML would work with Eureka County to find ways to remedy any imbalance, such as providing necessary services at less cost, including contribution of EML resources.

In addition, EML proposes to work with Eureka County to identify ways to improve medical services and emergency response services for the community. EML would encourage employees to become active members of the volunteer fire and medical emergency response services.

In an effort to reduce traffic on existing roads, EML would provide bus or other multi-passenger transportation to employees. EML would also encourage carpooling among employees that do not elect to use company-provided transportation. EML would discourage unnecessary visits to the Project area by vendors, contractors, and mine support services. EML would coordinate with Eureka County and NDOT to address any transportation issues.

In addition, should there be sufficient interest, EML would establish and participate in a Mine Oversight and Liaison Yardstick Committee. This committee would be responsible for continually measuring effectiveness of these practices and identifying issues of concern to the local community.

2.1.14.2 Air Emissions

Appropriate air quality permits would be obtained from the NDEP, Bureau of Air Pollution Control (BAPC) for the new Project facilities and land disturbance. Committed air quality practices would include dust control for mine unit operations as described by the BAPC required

Fugitive Dust Control Plan. In general, the Fugitive Dust Control Plan would provide for water application of haul roads and other disturbed areas, chemical dust suppressant application (such as magnesium chloride) where appropriate, and other dust control measures as per accepted and reasonable industry practices. Where appropriate, disturbed areas would be seeded with an interim seed mix to minimize fugitive dust emissions from unvegetated surfaces.

Dust emissions in the process area would be controlled at the crusher and conveyor drop points through the use of water sprays and dry cartridge filter type dust collectors where necessary. Other process areas requiring dust or emission controls include the concentrate drying and packaging circuit, the TMO plant, FeMo plant, and the laboratory. Appropriate emission control equipment would be installed and operated in accordance with the construction and operating air permits.

2.1.14.3 Cultural Resources

Class III cultural resources surveys have been performed over the Project Area. A historic and ethnohistoric context document has been prepared. Avoidance is the BLM preferred treatment for preventing effects to historic properties (a historic property is any prehistoric or historic site) eligible to the NRHP or unevaluated cultural resources. However, if avoidance is not possible or is not adequate to prevent adverse effects, EML would undertake data recovery at the affected historic properties in accordance with the Programmatic Agreement (PA) between BLM, Nevada State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation that is presently in progress. Development of a treatment plan, data recovery, archeological documentation, and report preparation would be based on the "Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation," 48 CFR 44716 (September 29, 1983), as amended or replaced. If an unevaluated site cannot be avoided, additional information would be gathered and the site would be evaluated. If the site does not meet eligibility criteria as defined by the Nevada SHPO, no further cultural work would be performed. If the site meets eligibility criteria, a data recovery plan or appropriate mitigation would be completed under the PA.

EML would provide training to employees and contractors regarding the importance of cultural resources protection. EML would establish operational policies to protect cultural resources and minimize the potential for inadvertent impacts to sites.

The tailings and reclaim lines would cross the Pony Express Historic Trail as shown on Figures 2.1.1, 2.1.3, and 2.1.5 and would be buried as described in Section 2.1.7.1. EML would minimize impacts to the Pony Express Historic Trail by maintaining 450-foot buffers on either side of the trail for other facilities.

2.1.14.4 Waters of the State and Waters of the United States

Process components would be designed, constructed and operated in accordance with NDEP regulations. The proposed process facilities would be zero discharge and the TSFs would have engineered liner systems. Waste rock with the potential to generate acid or mobilize deleterious constituents would be identified through laboratory analyses during mining and segregated in the WRDFs designed to contain and collect precipitation and snowmelt that comes into contact with the segregated material. The WPCP and engineering design documents provide additional detail on methods to segregate, manage, and monitor waste rock (EML 2009a).

EML has prepared a storm water management plan (EML 2006**,** Appendix 7). This plan identifies additional specific control measures and monitoring requirements. The actual locations and numbers of sediment controls would be determined during final design and where appropriate during operations. In either case, the controls would be developed in accordance with the storm water plan and engineering design documents included in the WPCP.

A survey to identify waters of the US was conducted **in 2007** and no waters of the US were identified in the Project Area. **EML and the U.S. Army Corps of Engineers (USACE) are working together to update the survey and determination.**

2.1.14.5 Technical Updates

During the course of operations, EML along with stakeholders would periodically review and update, as necessary, the geochemical and hydrogeological predictions, mine waste characterization studies, and pit lake studies to incorporate new information accumulated during operations. **EML, along with stakeholders, would review the data every five years and make updates as necessary.** These updates would be provided to all stakeholders and would provide quantitative predictions of water quality during the operational and post-closure period. **For the purpose of this section, stakeholders are defined as agencies with regulatory authority and parties with an interest in technical evaluation of the proposed operations. EML recognizes that this could potentially encompass a large number of parties, and is committed to making ongoing evaluations available for public review within the constraints of efficient completion of such updates.**

2.1.14.6 Wildlife including Migratory Birds

Land clearing and surface disturbance would be timed to prevent destruction of active bird nests or young of birds during the avian breeding season (as determined by the MLFO) to comply with the Migratory Bird Treaty Act (MBTA) (see Mitigation Measure 3.23.3.3-7 for the timing). If surface disturbing activities would be unavoidable during the avian breeding and nesting season, EML would have a qualified biologist survey areas proposed for disturbance for the presence of active nests immediately prior to the disturbance. If active nests were located, or if other evidence of nesting is observed (mating pairs, territorial defense, carrying nesting material, transporting of food), an appropriate buffer would be identified by BLM and NDOW biologists and be placed around the nest to prevent destruction or disturbance of nests until the birds would be no longer present.

Operators would be trained to monitor the mining and process areas for the presence of larger wildlife such as mule deer (*Odocoileus hemionus)* and sensitive species such as greater sage-grouse. Mortality information would be collected and reported in accordance with the industrial artificial pond permit. EML would establish wildlife protection policies that would prohibit feeding or harassment of wildlife.

Power poles would be built with **perch deterrents** to protect raptors from electrocution and to reduce predation of greater sage-grouse by perching raptors. Flagging or flight diverters would be added to fencing in greater sage-grouse habitat. Greater sage-grouse chick crossings would be installed along unburied portions of the water pipelines to allow non-flying chicks to cross the pipelines. These crossings would be constructed of earth and would be about 12 feet wide and have 3H:1V slopes.

2.1.14.7 Protection of Survey Monuments

To the extent practicable, EML would protect all survey monuments, witness corners, reference monuments, bearing trees, and line trees against unnecessary or undue destruction or damage. If, in the course of operations, any monuments, corners, or accessories would be destroyed, EML would immediately report the matter to the authorized officer. Prior to destruction or damage during surface disturbing activities, EML would contact the BLM to develop a plan for any necessary restoration or reestablishment activity of the affected monument in accordance with Nevada IM No. NV-2007-003 and the Nevada Revised Statutes (NRS). EML would bear the cost for the restoration or reestablishment activities including the fees for a Nevada Professional Land Surveyor.

2.1.14.8 Noxious Weeds, Invasive & Nonnative Species

A noxious weed monitoring and control plan would be implemented during construction and continue through operations. **The bulk of weed control in Eureka County on public and private land is accomplished through the Eureka County Department of Natural Resources and the Diamond Valley Weed Control District in coordination with the BLM on public land. A noxious weed monitoring and control plan would be implemented during construction and continuing through operations. EML would coordinate weed control with Eureka County and the Diamond Valley Weed Control District.** The Plan would contain a risk assessment, management strategies, provisions for annual monitoring, treatment, and treatment evaluation. The results from annual monitoring would be the basis for updating the plan and developing annual treatment programs.

The Noxious Weed Plan is included in Appendix 13 of the Plan and includes the following objectives: 1) to provide the steps necessary for EML to assess the existence of noxious weeds within and adjacent to the Project boundary; 2) to provide EML with preventive and treatment measures which would control the spread and establishment of noxious weeds; 3) to formulate management objectives consistent with the BLM; 4) to set priorities for weed management; and 5) to identify monitoring needs and frequency of monitoring (EML 2006).

The Project would have areas of disturbance, including those associated with ROWs, roads and travel corridors, where management for the prevention of invasion by noxious weeds and nonnative plant species and infestation of rodents would be implemented. Nevada certified licensed applicators would be contracted, as necessary, to apply any chemical pesticides determined to be required to control invasive pests in accordance with federal and state laws and regulations. This would include both restricted-use and general-use pesticides as regulated by Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and NRS Chapter 555. All pesticides and herbicides would be used in accordance with their individual labeling which contains the requirements and procedures for transportation, use, storage, and disposal.

2.1.14.9 Wildland Fire Prevention

The following precautionary measures would be taken to prevent wildland fires. In the event Project-related activities result in a fire, EML would be held liable for all suppression costs.

a. Light vehicles traveling outside of the main mining areas and along roads that traverse vegetated rangeland during fire season would carry a small water supply in order to control sparks that may be generated by exhaust.
b. Adequate firefighting equipment i.e., shovel, pulaski, extinguisher(s), and a minimum of ten gallons of water would be kept at the drill site(s).
c. Vehicle catalytic converters would be inspected often and cleaned of all brush and grass debris.
d. When conducting welding operations, they would be conducted in an area free of or mostly free of vegetation. A minimum of ten gallons of water and a shovel would be on hand to extinguish any fires created from the sparks. Extra personnel would be at the welding site to watch for fires created by welding sparks.
e. Wildland fires would be reported immediately to the BLM Central Nevada Interagency Dispatch Center (CNIDC) at (775) 623-3444. Helpful information to be reported includes the location (latitude and longitude if possible), what is burning, the time the fire started, who/what is near the fire, and the direction of fire spread.
f. When conducting operations during the months of May through September, the operator must contact the BLM **Battle Mountain District Office (**BMDO**)**, Division of Fire and Aviation at (775) 635-4000 to find out about any fire restrictions in place for the area of operation and to advise this office of approximate beginning and ending dates for activities.

Additionally, the powerline ROW application includes the implementation of monitoring and maintenance as outlined in the POD (EML 2008a). The Maintenance Plan for the POD is summarized below.

> **EML would have an agreement in place with the utility to maintain the powerlines and associated equipment.** Emergency maintenance, such as repairing downed wires during storms and correcting unexpected outages, would be performed by **the contracted utility** or their subcontractor. **The utility** would respond to emergency conditions along the proposed route within a reasonable amount of time after an incident. The length of time needed to make the repairs would depend on the nature of the outage. **The agreement would mandate that** manuals include emergency response procedures, as well as operations and maintenance activities for substations, metering stations, and transmission lines which would be implemented for this **P**roject as necessary.
>
> **The utility**, under an Operating and Maintenance Agreement with EML, would maintain the proposed transmission system by monitoring, testing, and repairing equipment. The following are typical maintenance activities:
>
> - Regular aerial or ground inspections with additional emergency aerial or ground inspections after storms, severe wind, lightning or other weather factors, or reported vandalism.

- Annual ground inspections of the transmission line with monthly inspections of the substation facilities.
- Routine maintenance to inspect and repair damaged structures, conductors, and insulators.
- Emergency maintenance to immediately repair transmission lines damaged by storms, floods, vandalism, or accidents. Emergency maintenance would involve prompt movement of crews to repair damage.
- Access road maintenance to re-grade and fill ruts or ground depressions, clear and repair culverts, and repair erosion-control features and gates.
- Vegetation management activities including clearing brush and noxious weeds, and undergrowth.
- Structure pad maintenance to re-grade and fill ruts and depressions around pole base and work areas.

Maintenance of the proposed transmission system would consist of monitoring, testing, and repair of equipment, as appropriate, based on a set maintenance program and schedule. EML would visually inspect each structure within the **ROW** at least annually. Some portions of access roads would be maintained, if necessary, to allow access of workers and equipment for maintenance. **The utility** would maintain the **ROW** in accordance with BLM **ROW** grant permit stipulations.

Maintenance would be performed as needed. When access is required for non-emergency maintenance and repairs, **the utility** would adhere to the same precautions taken during the construction. Emergency maintenance would involve prompt movement of crews to repair or replace any damage. Crews would be instructed to protect plants, wildlife, and other environmental resources. Restoration procedures following completion of repair work would be similar to those prescribed for normal construction. Noise, dust and danger caused by maintenance vehicle movement would be minimized to the extent practical.

To reduce the threat of wildland fire to the infrastructure associated with the powerline, EML would utilize one or more of the following mechanical treatments to keep vegetation at ten tons per acre of total aboveground biomass (or less) in areas that have piñon-juniper, two tons per acre of total aboveground biomass (or less) in big sagebrush (*Artemisia* sp.), and 800 pounds per acre of total above ground biomass (or less) of fine fuels in grasses: mowing/mastication; high intensity/short term grazing; hand thinning; or chemical treatment.

Activity fuels created by vegetation removal would be either piled and burned or chipped. Pile burning disposal would involve the burning of piles of specific size and fuel size distribution. The burning of the piles would be limited by the size of the pile, the time of day and season of ignition, live fuel moisture variations as a result of changes in elevation, and firing patterns.

Any surface disturbance would be reseeded with the BLM-recommended seed mixes. If noxious weed species are found, EML would contact the BLM Weeds Management Specialist in order to deal with the proper treatment and actions.

The assessment of the vegetation to determine the total above ground biomass EML would use the "Stereo Photo Series for Qualifying Natural Fuels Volume IV: Pinyon-Juniper, Chaparral, and Sagebrush Types in the Southwestern United States" to determine the values.

2.1.14.10 Growth Media/Cover Salvage and Storage

Suitable growth media and cover would be salvaged and stockpiled during the development of the mine pit, and during construction of the WRDFs and the TSFs. A **G**rowth **M**edia **M**anagement **P**lan **(GMMP)** is included in Appendix 10 of the Plan.

Following stripping, growth media and cover would be stockpiled within the proposed disturbance areas. Growth media/cover stockpile**s** would be located such that they would not be disturbed by mining operations. The surfaces of the stockpiles would be shaped after construction with overall slopes of 2.7H:1V or shallower to reduce erosion. To further minimize wind and water erosion, the soil stockpiles would be seeded after shaping with an interim seed mix developed in conjunction with the BLM. Diversion channels and/or berms would be constructed around the stockpiles as needed to prevent erosion from overland runoff. BMPs such as silt fences or staked weed free straw bales would be used as necessary to contain sediment liberated from direct precipitation.

2.1.14.11 Erosion and Sediment Control

BMPs would be used to limit erosion and reduce sediment in precipitation runoff from proposed Project facilities and disturbed areas during construction, operations, and initial stages of reclamation.

BMPs that would be used during construction and operation to minimize erosion and control sediment runoff and would include:

- **Surface stabilization measures – dust control, mulching, riprap, temporary gravel construction access, temporary and permanent revegetation/reclamation, and placing growth media;**
- **Runoff control and conveyance measures – hardened channels, runoff diversions; and**
- **Sediment traps and barriers – check dams, grade stabilization structures, sediment detention, sediment/silt fence and straw bale barriers, and sediment traps.**

Revegetation of disturbed areas would reduce the potential for wind and water erosion. Following construction activities, areas such as cut and fill embankments and growth media/cover stockpiles would be seeded as soon as practicable and safe. Concurrent reclamation would be maximized to the extent practicable to accelerate revegetation of disturbed areas. All sediment and erosion control measures would be inspected periodically, and repairs performed as needed.

2.1.15 Monitoring

As part of the Plan, EML proposes to monitor the following components in compliance with state permits and other plans: air quality, tailings effluent and solids chemistry, noxious weeds, reclamation, slope stability, storm water, waste rock chemistry, and wildlife (EML 2006).

EML has proposed a detailed Water Resources Monitoring Plan, which is incorporated in this EIS as Appendix **C**. **In addition to the monitoring requirements consistent with 43 CFR**

3809.401(b)(4), and applicant committed practices outlined for water resources, an advisory committee would be established as described in the water resources monitoring plan (Appendix C). Eureka County would be invited to participate on this advisory committee. The establishment of the advisory committee would allow participants to review the monitoring reports, meet on a periodic basis and comment on monitoring results.

The overall goals and objectives of the advisory committee would be to review the monitoring protocols, data, and reports. The committee would meet on a periodic basis and make recommendations to the BLM on operational changes or compliance issues.

The establishment of the advisory committee would be based on an agreement subsequent to the issuance of a ROD and Plan approval. This agreement would be consistent with the approved Plan and mitigation identified in the EIS and would establish the roles and responsibilities of all parties involved.

2.1.16 Reclamation and Closure

Reclamation of disturbed areas resulting from activities outlined in the Plan would be completed in accordance with BLM and NDEP regulations. The Project disturbance areas are summarized in Table 2.1-1. The areas proposed for disturbance can be divided into the following: open pit; WRDFs; TSFs; utility corridors; borrow areas; growth media stockpiles; haul roads; buildings and yard areas around the mine; mill; TMO plant; administration; laboratory; and ancillary facilities. With the exception of the open pit, surface mine components would be reclaimed and revegetated.

EML would provide a reclamation financial guarantee in accordance with 43 CFR 3809.522 and 3809.553, as well as NAC 519A.380. Within three years following Plan approval and at least every three subsequent years, EML would update the guarantee to reflect the actual disturbance and whatever additional disturbance is planned for the Project phase anticipated over the next three-year period. Changes to equipment, consumables, and man power costs would also be incorporated during the updates.

2.1.16.1 Post-Closure Monitoring and Maintenance

EML would create a **L**ong-**T**erm **F**unding **M**echanism **(LTFM)** for the BLM to assure completion of long-term post-closure monitoring and mitigation obligations (after reclamation and financial guarantee release) of EML for the Project. The **LTFM** would be reviewed annually during the operation phase of the Project and potentially increased to meet the monitoring and mitigation needs associated with the Project. **There is a potential for additional monitoring and maintenance tasks to be required beyond the 30-year post-closure timeline that is currently not included in the reclamation cost estimate. Financial assurance for these tasks would be provided outside of the reclamation financial guarantee by means of a LTFM. The specifics of the LTFM and the amount of the assurance needed would be determined in cooperation with the BLM. The tasks to be covered by the LTFM could include, but are not limited to, the following: maintenance of pit perimeter fencing; water quality monitoring of the pit lake, management of the draindown from the PAG WRDF and management of the draindown from the TSFs; and maintenance of ET cells that would be constructed to manage long-term draindown from the TSF. Treatment of the pit lake water is not**

included in the LTFM because the pit lake is a hydrologic sink and therefore would not impact the quality of the surrounding ground water. Monitoring costs during operations and the 30-year closure period would be covered in the reclamation financial guarantee, and if information collected during this period indicates the need, the LTFM may be adjusted. Maintenance of ET cells that would be constructed to manage long-term draindown from the TSFs and the PAG WRDF could include replacing the backfill. However, the ET cells would be designed simply to provide containment of draindown solution as it evaporates and backfill that would function as growth media for vegetation. Over long time periods, salts in the draindown solution that precipitate within the backfill could completely occupy the media pore space, affecting the viability of vegetation. The ET cells would continue to provide containment by means of its synthetic liner, and solution draindowns would decrease over time, reducing the amount of solution volume that would need to be contained. As stated previously, the maintenance specifics and costs would be determined in cooperation with the BLM. Based on further monitoring and evaluation, additional mitigation measures and funding requirements can be implemented at any time if conditions warrant. EML would remain financially responsible for any additional mitigation that might be required.

2.1.16.2 Growth Media/Soil Balance

A preliminary growth media balance for the Project, shown in Table 2.1-7, indicates approximately 19 million yd^3 of material could be salvaged from the disturbed areas. Table 2.1-7 also shows the volumes needed to cover the facilities at 12, 18, and 24 inches. Specifics on the soil types are discussed in Section 3.5. Alluvium is also considered to be suitable growth media; where the term "growth media" is used, it should be understood that alluvium is included in addition to topsoil. Growth media management is addressed in the **GMMP** (EML 2006**,** Appendix 10). The growth media material balance indicates the recovered growth media volumes would be adequate to provide the proposed cover amounts. Should a shortfall be experienced alluvium would be excavated below grade within the footprint of the growth media stockpile areas.

2.1.16.3 Revegetation, Seeding, and Planting

Reclaimed surfaces would be revegetated to control runoff, reduce erosion, provide forage for wildlife and livestock, and reduce visual impacts. Seed would be applied with either a rangeland drill or with a mechanical broadcaster and harrow, depending upon accessibility. Seeding would take place after grading and growth media application of reclaimed areas. Noxious weeds would be controlled as outlined in Section 2.1.14.7.

Reclamation seed mixtures and application rates, based on BLM requirements, are shown in Tables 2.1-8 and 2.1-9. These mixtures would provide forage and cover species similar to the pre-disturbance conditions, facilitating the post-mining land uses of livestock grazing and wildlife habitat. In addition, these seed mixes have been determined based on the species' ability to grow within the constraints of the low annual precipitation experienced in the region, its suitability for site aspect, and the elevation and soil type.

The proposed seed mixture and application rates would be subject to modification by the BLM. The actual seed mixture and application rates would be determined prior to seeding based on the

Table 2.1-7: Soil Inventory and Projected Requirements

Soil Type	Soil Depth (in.)	Area (Acres)/ Volume (yd^3)	Facility								Totals
			Waste Rock Stockpile PAG	Waste Rock Stockpile Non-PAG	Inter Pit	Mount Hope Pit	North Tailings Facility	Plant/ Admin/ Yards	South Tailings Facility	Temp Low-Grade Ore Stockpile*	
AT	13	Area	199	0	20	0	0	0	0	0	219
		Volume	347,808	0	34,956	0	0	0	0	0	382,763
LK	19	Area	0	244	20	110	79	5	712	0	1,170
		Volume	0	623,284	51,089	280,989	201,801	12,772	1,818,764	0	2,988,700
RAC	29	Area	303	336	16	60	0	289	0	327	1,331
		Volume	1,181,363	1,310,027	62,382	233,933	0	1,126,779	0	1,274,937	5,189,421
RHC	21	Area	0	0	0	0	0	0	1,668	0	1,668
		Volume	0	0	0	0	0	0	4,709,320	0	4,709,320
MAE	34	Area	62	4	140	448	0	33	0	90	777
		Volume	283,409	18,284	639,956	2,047,858	0	150,847	0	411,400	3,551,753
321	34	Area	0	83	24	53	0	0	0	0	160
		Volume	0	379,402	109,707	242,269	0	0	0	0	731,378
440	60	Area	0	0	0	0	32	0	0	0	32
		Volume	0	0	0	0	258,133	0	0	0	258,133
600	21	Area	0	0	0	0	66	0	0	0	66
		Volume	0	0	0	0	186,340	0	0	0	186,340
681	14	Area	0	175	17	36	0	0	0	0	228
		Volume	0	329,389	31,998	67,760	0	0	0	0	429,147
764	13	Area	0	262	14	27	0	0	0	0	303
		Volume	0	457,918	24,469	47,190	0	0	0	0	529,577
830	14	Area	0	397	11	0	95	0	0	0	503
		Volume	0	747,242	20,704	0	178,811	0	0	0	946,758
831	14	Area	0	0	0	0	607	0	0	0	607
		Volume	0	0	0	0	1,142,509	0	0	0	1,142,509
922	9	Area	0	181	0	0	0	0	0	0	181
		Volume	0	219,010	0	0	0	0	0	0	219,010
Total Salvaged*		Area	564	1,682	262	734	879	327	2,380	417	7,245
		Volume	1,631,322	3,676,101	877,734	2,915,428	1,770,835	1,161,358	5,875,276	1,517,703	19,138,328
Total Required at 12"		Volume		2,713,627				527,560			3,241,187

Soil Type	Soil Depth (in.)	Area (Acres)/ Volume (yd^3)	Facility								Totals
			Waste Rock Stockpile PAG	Waste Rock Stockpile Non-PAG	Inter Pit	Mount Hope Pit	North Tailings Facility	Plant/ Admin/ Yards	South Tailings Facility	Temp Low-Grade Ore Stockpile*	
Depth											
Total Required at 18" Depth		Volume									
Total Required at 24" Depth		Volume	1,819,840				2,836,240		7,679,467	1,345,520	13,681,067
Total Required		Volume									16,922,253

In the case that LGO is still present at the time of closure, two feet of cover material would be placed on the stockpile.

AT - Atrypa assoc. - Atrypa gravelly loam, slopes 15 to 30 percent - Atrypa loam, slopes four to 15 percent.
LK - Labshaft-Rock outcrop complex - Labshaft stony loam, slopes 15 to 30 percent - Rock outcrops.
MAE - Mau stony loam, slopes 15 to 30 percent.
RAC - Ratto - Ratto gravelly fine sandy loam, slopes two to eight percent.
RHC - Ruby Hill - Ruby Hill fine sandy loam, slopes two to eight percent.
321 - Mau-Shagnasty-Eightmile assoc. - Mau stony loam, slopes 15 to 30 percent - Shagnasty very stony loam, slopes 15 to 30 percent - Eightmile very gravelly loam, slopes 15 to 30 percent.
440- Kercan loam, slopes zero to two percent.
600 - Ruby Hill - Ruby Hill sandy loam, slopes zero to four percent.
681 - Chad-Cleavage-Softscrabble assoc. - Chad cobbly loam, slopes 15 to 30 percent - Cleavage gravelly loam, slopes eight to 15 percent - Softscabble stony fine sandy loam, eight to 15 percent slopes.
770 - Welch loam, drained, slopes zero to four percent.
764 - Shagnasty-Ravenswood-Rock outcrop assoc. - Shagnasty extremely stony loam, slopes 30 to 50 percent - Ravenswood extremely stony loam, slopes 30 to 50 percent - Rock outcrop.
830 - Atrypa - Atrypa gravelly loam, slopes 30 to 50 percent.
831 - Atrypa-Mau assoc. - Atrypa gravelly loam, slopes 15 to 30 percent.
922 - Handy - Handy loam, 2 to 8 percent slopes

Reclamation Growth Media Depths
Temp. LGO Stockpile 24"
PAG WRDF 24"
Tailings Facilities, Embankment and impoundments 18"
Non-PAG WRDF 12"
Plant/Admin/Yards 12"
Pit 0"
Inter Pit 0"

results of reclamation in other areas of the mine, concurrent reclamation, revegetation test plots, or changes by the BLM in its seed mixture requirements.

Table 2.1-8: Seed Mix for Elevations Above 7,500 Feet Above Mean Sea Level

Common Name	Species	Pure Live Seed (lb./acre)
Shrubs (Use four of the following shrubs at the rates identified)		
Snowberry	*Symphoricarpos* sp.	4.0
Serviceberry	*Amelanchier* sp.	4.0
Antelope bitterbrush	*Purshia tridentata*	8.0
Curl-leaf mountain mahogany	*Cercocarpus ledifolius*	8.0
Currant	*Ribes* sp.	0.5
Forbs (Use two of the following forbs at the rates identified)		
Yarrow	*Achillea* sp.	0.1
Palmer penstemon	*Penstemon palmeri*	0.25
Lewis flax	*Linum lewisii*	1.0
Arrowleaf balsamroot	*Balsamorhiza sagittata*	2.0
Common sainfoin	*Onobrychis viciifolia*	6.0
Cinquefoil	*Potentilla simplex*	0.1
Small burnet	*Sanguisorba minor*	4.0
Grasses (Use four of the following grasses at the rates identified)		
Idaho Fescue	*Festuca idahoensis*	1.0
Indian Ricegrass	*Achnatherum hymenoides*	1.0
Orchard grass	*Dactylis glomerata*	0.5
Great Basin wildrye	*Leymus cinereus*	1.0
Bluebunch wheatgrass	*Pseudoroegneria spicata*	1.0
Sandberg bluegrass	*Poa secunda*	0.5
Mountain brome	*Bromus carinatus*	2.0

Note: Application mix and rates may be subject to modification by the BLM.

Table 2.1-9: Seed Mix for Elevations between 5,500 and 7,500 Feet Above Mean Sea Level

Common Name	Species	Pure Live Seed (lb./acre)
Shrubs (Use four of the following shrubs at the rates identified)		
Wyoming big sagebrush	*Artemisia tridentata* ssp. *wyomingensis*	0.1
Fourwing saltbush	*Atriplex canescens*	2.0
Spiny hopsage	*Grayia spinosa*	1.0
Forage kochia	*Bassia prostrate*	0.25
Nevada Mormon tea	*Ephedra nevadensis*	4.0
Forbs (Use two of the following forbs at the rates identified)		
Scarlet globemallow	*Sphaeralcea coccinea*	0.5
Palmer penstemon	*Penstemon palmeri*	0.5
Lewis flax	*Linum lewisii*	1.0

Common Name	Species	Pure Live Seed (lb./acre)
Sweetvetch	*Hedysarum boreale*	2.0
Grasses (Use four of the following grasses at the rates identified)		
Crested wheatgrass	*Agropyron cristatum*	2.0
Indian Ricegrass	*Achnatherum hymenoides*	2.0
Great Basin wildrye	*Leymus cinereus*	2.0
Bottlebrush squirreltail	*Elymus elymoides*	2.0

Note: Application mix and rates may be subject to modification by the BLM.

2.1.16.4 Proposed Reclamation Schedule

The Project would be active for approximately 44 years. The projected reclamation schedule for the Project is shown on Table 2.1-10. Concurrent reclamation would be ongoing over the life of the mine for areas that have reached their final configurations. However, reclamation of WRDFs would be started in Year 15 as that is when final build out is expected to be completed on a portion of the storage areas, and would continue through approximately Year 40. Upon completion of mining, the WRDF recontouring, cover or growth media placement, and seeding would be completed.

Closure of the South TSF would commence in Year 36. The South TSF would be allowed to drain and consolidate prior to earthwork and reclamation commencement. Closure and reclamation of the process facilities and ancillary facilities would begin after the completion of milling as shown on Table 2.1-10.

2.1.16.5 Post-Mining Land Use and Reclamation Goals

Major land uses occurring in the Project Area include mineral exploration and development, livestock grazing, wild horse grazing, wildlife habitat, and dispersed recreation. Following closure, the Project Area would continue to support these uses. EML would work with the agencies and local governments to evaluate alternative land uses that could provide long-term socioeconomic benefits from the mine infrastructure; however, 43 CFR 3809 currently requires the removal of all structures associated with the Plan. Post-closure land uses would be in conformance with the RMP and Eureka County ordinances.

The goal of the reclamation program is to provide a safe and stable post-mining landform that supports defined land uses. To achieve this goal, the following objectives would be pursued:

- Minimize erosion and protect water resources through control of water runoff and stabilization of mine facilities;
- Establish post-reclamation surface soil conditions conducive to the regeneration of a stable plant community through stripping, stockpiling, and reapplication of growth media;
- Revegetate disturbed areas with a diversity of plant species in order to establish productive long-term plant communities compatible with post-mining land uses;

Table 2.1-10 Conceptual Reclamation Schedule

MINE COMPONENT	Mining and Milling Operations (Years)					Reclamation and Closure (Years)		
	1 - 10	11 - 20	21 - 30	31 - 40	41 - 44	45 - 54	55 - 64	65 - 74
Open Pit								
Pit Safety Berm Construction								
Pit Safety Berm Revegetation								
Waste Rock Disposal Facilities								
Regrading								
Growth Media Application								
Revegetation								
Low-Grade Ore Stockpile								
LGO Processing								
Growth Media Application of LGO Footprint								
Revegetation of LGO Foot-print								
Tailings Storage Facilities								
South TSF								
Tailings Consolidation								
Earthworks and Conceptual Cover Placement								
Revegetation								
North TSF								
Tailings Consolidation								
Earthworks and Conceptual Cover Placement								
Revegetation								
Mill Facilities								
Buildings/Structure Demolition & Removal								
Haul & Access Roads								
Haul Roads Earthwork/Revegetation								
Access Roads Earthwork/Revegetation								
Ancillary Facilities								
Growth Media Stockpiles								
Borrow Pits								
Sediment Control Structures								
Utility Corridors								
Exploration								
Regrading/Revegetation								
Reclamation Monitoring[1]								
PROCESS COMPONENT						Process Fluid Management and Drain Down (Years)		
						1 - 10	11 - 20	21 - 30+
Process Fluid Management								
South TSF Process Fluid Management								
IFM and Phase I Fluid Management								
Phase II Fluid Management								
Phase III Fluid Management								
Phase IV Fluid Management								
South TSF Evaporation Pond Construction								
South TSF ET Cell Conversion/Construction								
North TSF Process Fluid Management								
IFM and Phase I Fluid Management								
Phase II Fluid Management								
Phase III Fluid Management								
Phase IV Fluid Management								
North TSF Evaporation Pond Construction								
North TSF ET Cell Conversion/Construction								

[1] Reclamation monitoring includes five years of monitoring of the PAG WRDF for seepage.

- Mimic surrounding regional landscape vegetative and nonvegetative (i.e., rock outcrop, scree, and talus) component patterns; and
- Maintain public safety by stabilizing or limiting access to landforms that could constitute a public hazard.

2.1.16.6 Post-Mining Contours and Topography

The final grading plan for the Project is designed in part to minimize the visual impacts of the disturbance proposed by EML. Slopes would be regraded to blend with surrounding topography, interrupt straight line features and facilitate revegetation. Where feasible, large constructed topographic features, such as the WRDFs and TSFs may have rounded crests and variable slope angles to resemble natural landforms. The open pit would remain as a large depression, partially filled with water. A post-reclamation topographic map is provided as Figure 2.1.**2**1.

2.1.16.7 Final Gradient Slope Stability Criteria

2.1.16.7.1 Open Pits

The walls of the open pit would generally have an overall slope of 41º to 49º. Actual slope angles would be subject to engineering studies, conditions encountered during actual mining operations, and MSHA regulations and guidelines. Additional studies are ongoing to refine the pit stability predictions.

Operational and post-closure open pit slope configurations would be controlled by several parameters that include the geometry of the ore body, geologic and geotechnical characteristics of the host rock, equipment constraints, and safe operating practices.

2.1.16.7.2 Waste Rock Disposal Facilities

Slope stability analyses examined the stability of the PAG and Non-PAG WRDFs and the LGO Stockpile under both static and seismic loading conditions. Appendix 3, Part A in the Plan (EML 2006) presents the WRDF stability analyses. The results of the analyses indicate that the WRDFs and LGO Stockpile would be stable for all conditions analyzed.

2.1.16.7.3 Tailings Storage Facility

Slope stability analyses were conducted in support of the conceptual design of the TSF embankments (AMEC 2009). For a water impoundment facility**,** the desired minimum static factor of safety required by the Nevada Division of Water Resources (NDWR) is typically 1.4 for static conditions. As shown in the assessment, the proposed facility is stable under static loading conditions since the computed values exceed the prescriptive factors of safety. The static factor of safety for the ultimate (full build out) tailings facility was determined to be 2 and 1.4 for the circular and block failure models, respectively.

2.1.16.7.4 Erosional Stability

Soils salvaged from mine facility footprints as well as some of the near surface alluvial material mined from the open pit would be used as soil cover materials during reclamation. A detailed soils survey has been completed by SRK (SRK 2006) to provide an inventory of available growth media (Table 2.1-7). This inventory has been utilized to estimate the likely mix of growth media available and to allow a detailed evaluation of the site-specific stability of the proposed major reclamation components. The characteristic of each soil type and estimated recovered volume was used on a weighted average basis to determine potential soil loss on the WRDFs using the Revised Uniform Soil Loss Equation (RUSLE2). The WRDFs and LGO Stockpile would be designed with 100-foot high benches and 20-foot setbacks.

Results of the RUSLE2 analyses indicate that the reclaimed surfaces with vegetative cover exhibit a range of erosion rates due to the characteristics of the different soils. Adding controls such as dozer tracking and contour furrowing would limit sheet flow erosion on the WRDF surfaces.

The analyses and recent similar experience at other Nevada mines indicate that the use of erosion control BMPs during reclamation activities would greatly reduce the sediment migration from the facilities until vegetation can be established. EML would maintain BMPs at the base of those reclaimed slopes until vegetation has established.

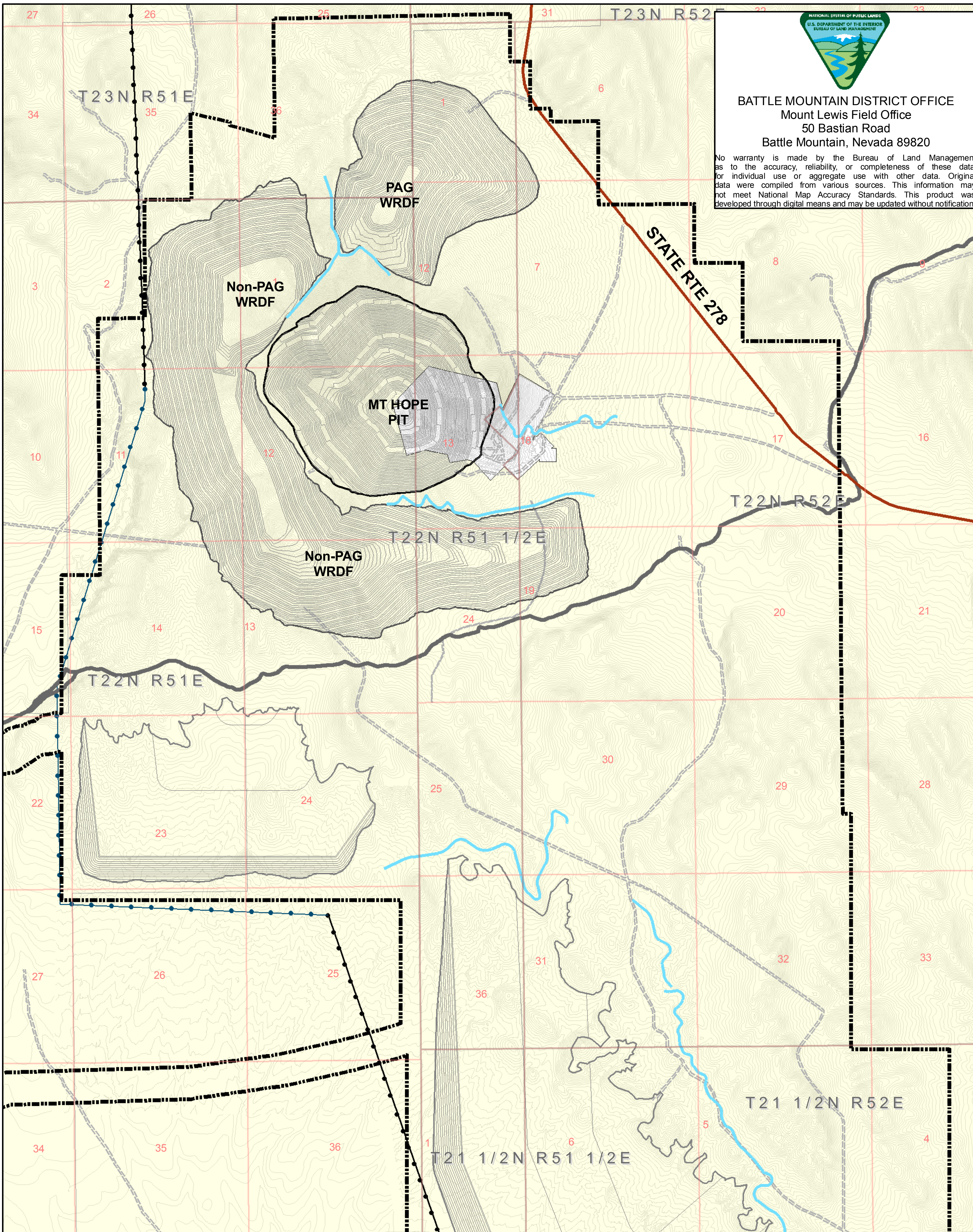
2.1.16.8 Reclamation of Open Pit

Mining the open pit would result in an excavation to a depth of approximately 2,300 feet below the existing water table, which would be approximately 2,640 feet beneath the natural surface. Open pit slopes would range from approximately 41º to 49º, depending on rock type and geotechnical considerations. Ongoing geotechnical and slope movement monitoring studies would be used to evaluate the safety of open pit wall slopes. Reclamation of the open pit would include construction of a pit perimeter berm to prevent vehicular access and deter livestock. This pit perimeter berm would be constructed with 1.5H:1V side slopes and have a height of six feet and a base width of 18 feet. After construction, this berm would be revegetated. Post-mining open pit wall modifications to decrease slope angles are not proposed. **Disturbance in the Interpit Area not covered by the berms would be ripped and scarified to prepare a seedbed prior to seeding.**

The slope angles of the open pit walls would not allow soil replacement and revegetation due to access logistics and safety concerns. Some of the open pit floors would be expected to be covered by water as the pit lake develops. The open pit floors and ramps would be expected to be competent rock surfaces that would be stable without reclamation. These areas have little or no potential to support vegetation. There are no plans to revegetate within the open pit footprint.

2.1.16.9 Reclamation of Tailings Facilities

Two TSFs would be constructed as part of the Project. The South TSF would operate between startup and Year 36. The North TSF would operate from Year 36 through the end of processing (Year 44). In general, reclamation activities would consist of drainage and consolidation of the tailings to allow access by heavy equipment. Earthwork would consist of recontouring the surface of the tailings impoundment to create a central short-term pool and keep the water from ponding on the beach or at the embankment face.



EXPLANATION

N

- Project Boundary
- Pony Express Trail
- Falcon-Gonder Power Line
- Power Line Reroute
- Diversion Channel
- Pit (50' Contours)
- Waste Rock Disposal Facilities (20' Contours)
- Tailing Storage Facilities (20' Contours)

Land Status

- Bureau of Land Management
- Private

0 0.5 1 Miles

DESIGN: EMLLC	DRAWN: CVD/GSL	REVIEWED: RFD	
CHECKED: -	APPROVED: RFD	DATE: 08/06/2012	
FILE NAME: p1635_Fig2-1-21_PostMiningTopography.mxd			

BUREAU OF LAND MANAGEMENT

MOUNT HOPE PROJECT

DRAWING TITLE:

Post MiningTopography (Year 80 and Beyond)

Figure 2.1.21

The general operational strategy of the South and North TSFs in preparation for final closure is to maintain perimeter deposition for the life of the mine. This method of tailings placement would provide an average 0.7 percent impoundment slope from the embankment to the supernatant pond.

2.1.16.9.1 Embankments

Tailings distribution pipelines and conveyance and distribution systems remaining on the TSF embankments at the end of operations would be removed to prepare for final earthworks reclamation. Since the downstream TSF embankments would be constructed at a 3H:1V slope, no additional regrading would be necessary. Minor regrading of the 30-foot wide access roads on the embankment crests would be needed to remove the safety berm used for vehicle/equipment access during operations.

The reclamation plan for the tailings embankments requires an 18 inch layer of growth media to be placed over the entire embankment surface. This growth media for the embankment covers would come from borrow areas sited adjacent to the TSFs or stockpiled growth media excavated from the facility footprint areas during construction. Growth media stockpile locations for the TSFs' reclamation activities are shown on Figures 2.1.1, 2.1.3, and 2.1.5. The final configurations of the South and North TSFs' embankments would have an overall slope of 3H:1V. After growth media placement, the embankments would be revegetated.

2.1.16.9.2 Removal of Tailings Conveyance and Distribution System

Tailings and reclaim conveyance pipelines, pumps, cyclone equipment and any other process related equipment and structures would require some level of characterization to ensure that this equipment is clean prior to removal. Process related equipment and structures would be those items which come into contact with process solution or process reagents. Process related structures and equipment would be rinsed prior to removal or disposal. These components would be visually inspected and tested to identify remaining contaminants following cleaning and rinsing. Components such as HDPE pipe that contain excessive solids, which could not be washed out with normal operating flows, would be buried in place within the TSF impoundments, if feasible. Materials removed from the site would be recycled, reused, or disposed of in a manner consistent with local, state, and federal regulations.

2.1.16.9.3 Tailings Impoundment

The South and North TSFs would undergo a draindown period during which time the supernatant fluids and tailings slimes in the supernatant pond depressions would be dried and consolidated through active and passive evaporation to enable safe access for equipment and materials. Consolidation is expected to take a number of years while seepage is actively evaporated.

Conceptual closure designs for the TSFs were prepared by AMEC (2010) (EML 2006, Appendix 14-C). Final closure designs for each TSF would be provided at the end of their operational design life.

The conceptual closure designs for the South and North TSFs impoundment areas at the end of planned mine life would include the installation of a geomembrane lined evaporation pond that would be sited in the supernatant pond depressions of each TSF. These evaporation ponds would be constructed within the TSFs impoundment footprints after sufficient consolidation and drying of the tailings has occurred. These evaporation ponds would be designed to function as artificial playas to temporarily capture runoff from meteoric water and allow this water to evaporate.

The evaporation ponds were sized to contain average monthly precipitation plus the 100-year, 24-hour storm event runoff volume over the impoundment footprint areas. Direct runoff volumes were calculated using the Natural Resource Conservation Service's (NRCS's) National Engineering Handbook, Part 630 Hydrology, Chapter 10 Procedure. The input requirements for this method consist of rainfall amount, drainage area, and curve number (CN).

Construction of the South and North TSFs' evaporation ponds or artificial playas would consist of placing geomembrane on the tailings surface depression created at the end of deposition. The geomembrane in the artificial playa areas would be covered with an 18 inch layer of dried tailings to serve as a protective cover. Once the geomembrane is covered with tailings, an 18-inch layer of growth media would be placed over the artificial playa surface. To contain the runoff volume from average monthly precipitation plus the 100-year, 24-hour storm event, the South TSF artificial playa would have a pond area of approximately 115 acres and a storage capacity of approximately 86 million gallons at a maximum depth of eight feet. The artificial playa for the North TSF would have an area of approximately 58 acres and have a storage capacity of approximately 30 million gallons at a maximum depth of 5.7 feet. The remaining tailings impoundment surfaces (outside of the playa footprint) would be covered with a 24-inch layer of growth media placed on a stabilized tailings surface. Mine rock used for the impoundment cover would be hauled directly from the Non-PAG WRDF.

Growth media used for the impoundment covers would come from stockpiles sited adjacent to the TSFs and containing growth media excavated from the facility footprint areas during construction.

After the mine rock and growth media covers have been placed, the South and North TSFs' impoundment areas would be reseeded.

2.1.16.9.4 TSF Fluid Management

At the end of mining operations, the TSFs would be anticipated to draindown fluid inventories for more than 30 years, and would thereafter provide a residual drainage from surface infiltration into the foreseeable future. The final management of the draindown fluid would depend on the water quality and other site-specific environmental factors, and would be required by NAC 445A.430 to be closed in a manner that does not degrade waters of the state. Specifics on the closure are outlined in the Plan (EML 2006) at Appendices 4 and 6.

The fluid management assumption estimates for the TSFs at the end of Project operations are shown in the Plan (EML 2006, Appendix 11). The draindown rate for the TSFs at Day 1 of Year 44 would be estimated at approximately 3,650 gpm.

The core approach to long-term closure would include two primary technologies:

- Installation of soil or geomembrane covers over the TSFs to limit infiltration; and

- Installation of semi-passive evaporative cells to handle mid-term and long-term remaining flows.

At the time of facility closure, tailings drainage would dictate a regime of active and passive evaporation within downstream evaporation cells and the tailings decant pool. As the water is removed from inventory, portions of the tailings facility would be armored and covered with soil from the embankment toward the decant pool. Once inventories would be low enough to be handled through evaporation at the lined cells below the embankment, the remainder of the TSF would be covered as described in Section 2.1.16.8.3. This design would limit infiltration and would also provide for contained evaporation of storm water runoff from the covered TSF. This design limits the potential for failure due to runoff management structures (e.g., spillway, **settling** basin, etc.).

Effectively, four phases of evaporation would be required throughout the closure process, with blending of strategies from each phase to the other:

- **A**ctive evaporation at the downstream evaporation ponds and recirculation and evaporation at the tailings surface;
- **A**ctive and passive evaporation at the evaporation cells;
- **P**assive evaporation at the evaporation cells only; and
- **L**ong-term passive evaporation using ET cells.

This approach acknowledges the initially high drainage rates and the need to first prevent any release from the system, while effectively eliminating inventory at maximum drainage rates from the tailings. Also, as evaporation at the tailings surface would result in reduced infiltration into tailings, the tailings surface evaporation system would be eliminated first in preference for the downstream active evaporation within the lined ponds. Finally, the active management would be phased out by improving the tailings cover and eliminating residual draindown to a level that can be handled by passive systems. The passive systems would then be partially reduced in size over time as flows reach steady state. **EML would explore and evaluate the technical and regulatory feasibility of recycling, injecting, discharging, or otherwise using the water stored in the tailings pond at the end of the Project life to prevent the potential waste of this resource, as opposed to disposal by evaporation.**

2.1.16.10 <u>Reclamation of Waste Rock Disposal Facilities</u>

The WRDFs would be reclaimed to meet certain general objectives including: reduced slope erosion, mass stability, rounded edges, and revegetated surfaces that would be similar to surrounding topographic features. Reclamation of the WRDFs would be conducted concurrently with regular mine operations to the extent reasonable.

An engineering design report has been prepared by SWC and is included in the Plan (EML 2006, Appendix 3). The report covers the foundation preparation and storm water control structures for developing the WRDFs. This report provides detailed conceptual designs of storm water control structures to divert and manage flows for exposed waste rock and reduce runoff into disturbed areas with upstream diversion structures. This report also provides a design for a geomembrane lined collection pond which would store runoff/infiltration from the PAG WRDF (PAG containing facility).

As areas of the WRDFs reach their ultimate configurations and become inactive, the storage area face would be regraded. The storage areas would generally be constructed in multiple lifts with typical heights of 100 feet and setbacks between lifts that would facilitate the grading to the final slope configuration with an interbench slope of 2.5H:1V or shallower, and a 20-foot wide bench at the toe of each regraded lift. These 20-foot wide benches, constructed every 100 feet vertically into the regraded slopes, would produce an overall average slope of 2.7H:1V from top to bottom and would be designed to reduce surface water flow velocities and subsequent erosion (Figure 2.1.**22**).

Once regraded, the surface of the Non-PAG WRDF would be covered with growth media to a depth of approximately 12 inches and seeded with the seed mixture selected from Table 2.1-8 or Table 2.1-9, or as determined at the time of reclamation through consultation with the BLM.

The PAG WRDF would be covered with two feet of growth media or cover material to minimize infiltration of meteoric water. Solution draining from the PAG WRDF would continue to be collected in the permanent drainage channel and used in process after the PAG WRDF is reclaimed, although solution flows would decrease due to placement of growth media or an ET layer. At closure of the mill, residual solution flows would be removed by evaporation. Specifics on the closure are outlined in the Plan (EML 2006) at Appendix 4.

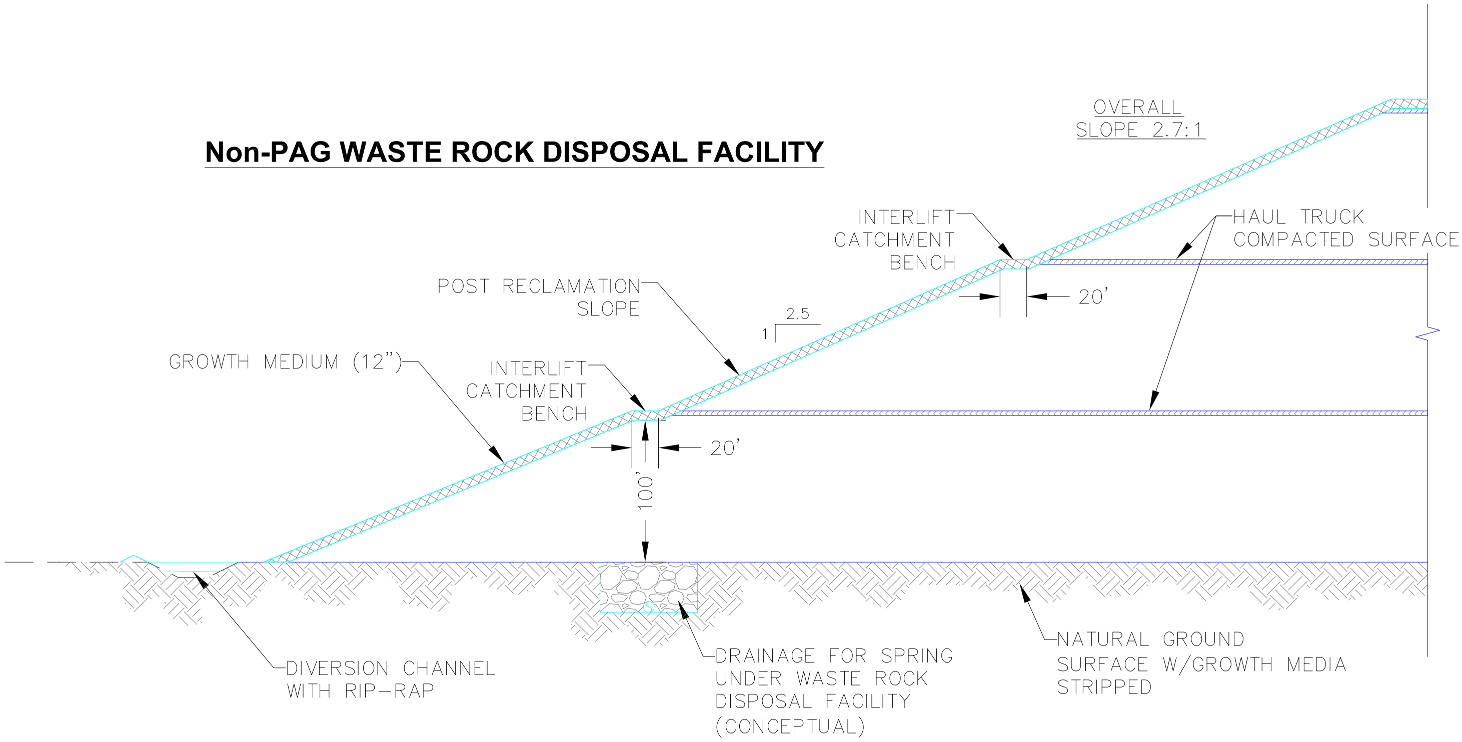
2.1.16.11 Low-Grade Ore Stockpile Area

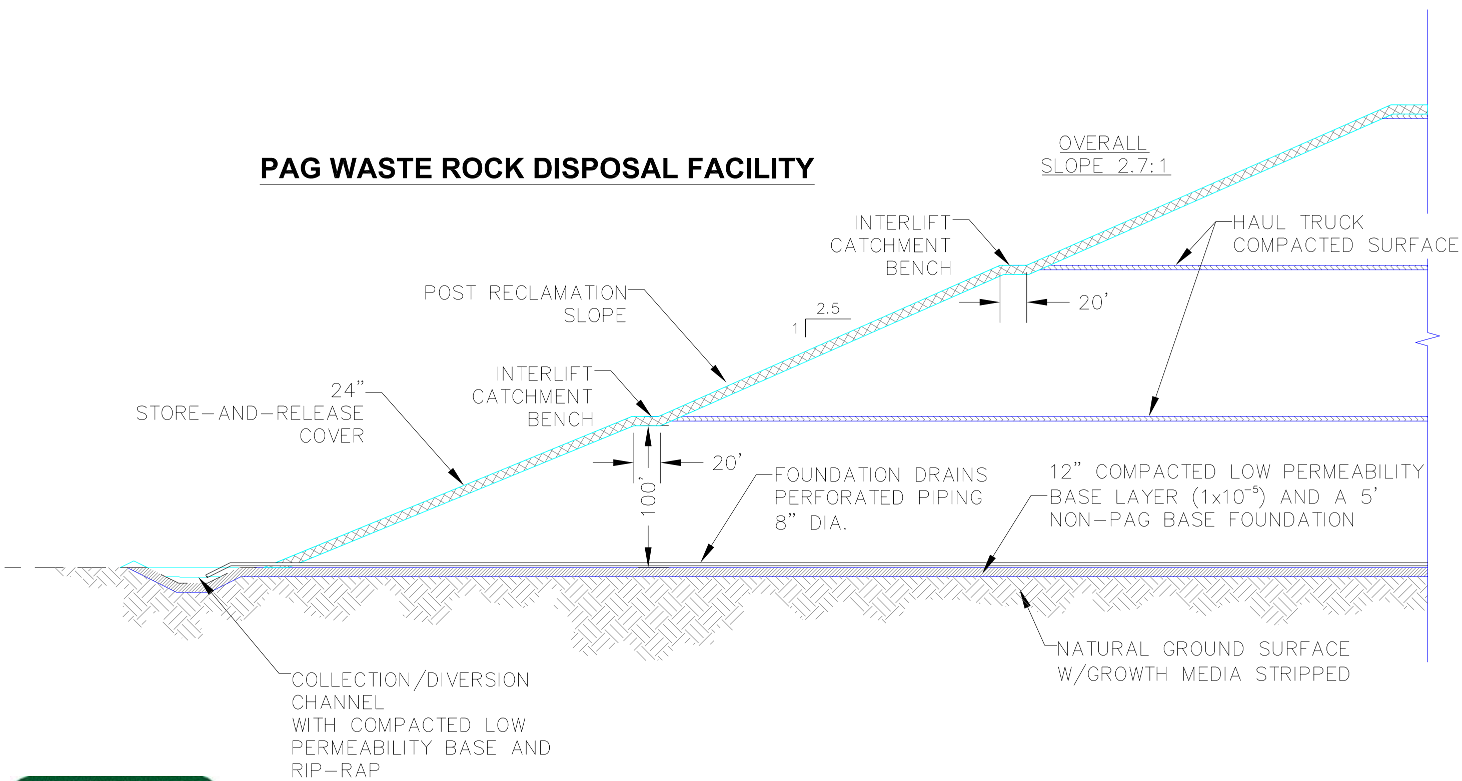
The former LGO Stockpile area would be cleared of any remaining material and reclaimed using the same methods as would be used for the ancillary facilities. These methods would include regrading for drainage, scarification, growth media placement, and seeding. If any material is still present at the time of closure, portions of the low-grade stockpile area that provide for containment for runoff and leachate from the low-grade material and storm water diversion would be retained. This area would then be covered and reclaimed in the same fashion as the PAG WRDF.

2.1.16.12 Reclamation of Ponds

Lined ponds, either process or non-process, subject to reclamation at the end of mine life include the South and North TSFs' underdrain ponds, mill process pond, the coarse ore stockpile pond and the LGO stockpile area/PAG WRDF collection pond.

Preliminary estimates of draindown rates from the South and North TSFs indicate that the underdrain collection ponds associated with each TSF would be needed during active and long-term fluid management as shown in Section 2.1.16.8.3. During closure of the TSFs and the active and passive fluid management period, each underdrain collection pond would be converted into an evaporation pond as discussed in Section 2.1.16.8.4. As previously discussed, partial reclamation of the evaporation ponds would take place as active fluid management transitions to passive fluid management. Upon completion of the passive evaporation period, the underdrain/evaporation ponds would be converted into ET cells to accommodate long-term tailings draindown.





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Revision Date: 08/06/2012	Revised: CVD/GSL	Approved: RFD
Scale: **Not to Scale**		
Project Number: **1635**		
Drawing Name: p1635_Fig2-1-10&22_WRDFCrossSections.dwg		

BUREAU OF LAND MANAGEMENT
MOUNT HOPE PROJECT

Post Reclamation Waste Rock Disposal Facility Cross Section
Figure 2.1.22

For the ponds (or portions of the ponds) not planned to be converted into ET cells, liners would be cut, folded, or disposed of in the pond bottoms prior to backfilling and reclamation of the pond. These ponds or portions of ponds would be returned to a landform that is free draining and promotes post-closure revegetation through placement of an average of 12 inches of growth media.

The design of the WRDF foundation preparation and storm water control includes a geomembrane lined pond that would be constructed at the southeast toe of the LGO Stockpile area and would collect runoff/infiltration from the PAG WRDF and the LGO Stockpile area. After final reclamation of the PAG WRDF and removal of the LGO Stockpile area, this lined pond would be converted into an ET cell in a similar manner to the TSFs' underdrain ponds discussed above. Although infiltration flows from the PAG WRDF would not be anticipated during the active mine life, the ET cell would be designed to store and evaporate potential flows from infiltration during post-reclamation. The final design considerations of this ET cell would include observed and modeled infiltration flows during post-reclamation and a design to allow non-impacted surface runoff to bypass the ET cell design during higher flows from storm events and rapid snow melt.

Solids would be expected to be present in some quantity in the lined ponds at the time of reclamation and closure. Representative samples would be obtained to determine the chemical characteristics of the pond solids. Depending on the results of the characterization testing, the solids would be left in the ponds and buried in place, removed and placed in the tailings impoundment, or removed and placed in an approved landfill.

2.1.16.13 Constraints on Estimated Time to Complete Reclamation

The estimated time to complete reclamation assumes that average precipitation occurs during the years following reseeding. Periods of drought could delay revegetation, while excessive precipitation could increase tailings inventory evaporation times. With the exception of the TSFs and monitoring, reclamation activities would be expected to be completed within approximately three years after the end of processing activities. The North and South TSFs would be expected to take several years to drain and consolidate so that heavy equipment could recontour and reclaim the surface. The conceptual reclamation schedule is shown in Table 2.1-10.

2.1.16.14 Road Reclamation

Roads would be recontoured or regraded to approximate the original contour, covered with soil/growth media, and reseeded. Asphalt roads and parking areas would be ripped and buried in place with at least 12 inches of growth media.

Some access roads would be needed to access monitoring points. As monitoring is completed and the facility is considered to be closed, the access roads would be reclaimed.

2.1.16.15 Disposition of Buildings and Ancillary Facilities

During final mine closure, new uses for the mine infrastructure may be found that would be in conformance with Eureka County's Economic Development Plan (see Section 2.1.16.4). However, 43 CFR 3809 currently requires the removal of all structures associated with the Plan.

Under the Plan, buildings and structures would be dismantled, and materials would be salvaged or removed to the proposed landfill or other authorized landfill. Mill and processing infrastructure (pipes, tanks, and other conveyance/storage vessels) would be properly characterized and decommissioned. Concrete foundations and slabs would be broken using a track hoe mounted hydraulic hammer or similar method and buried in place under approximately three feet of material in such a manner to enhance storm water runoff and prevent storm water run-on and ponding. After demolition and salvage operations would be complete, the disturbed areas would be covered with approximately 12 inches of growth media and revegetated. Alternatively, buildings and structures may be left on private land in support of other industrial or commercial post-mining land uses.

All reagents and explosives would be removed for use as product at other mines, or appropriately disposed. Surface pipelines would be removed and salvaged or disposed. Underground pipeline ends would be capped and left in place. Unneeded utility poles would be cut off at ground level and removed. Materials removed from the site would be recycled, reused, or disposed of in a manner consistent with local, state, and federal regulations.

2.1.16.16 Surface Facilities or Roads not Subject to Reclamation

As determined by the BLM, roads on public lands suitable for public access or which continue to provide public access consistent with pre-mining conditions would not be reclaimed at mine closure. Narrower access roads may remain on large haul roads after they have been recontoured.

2.1.16.17 Drill Hole Plugging and Abandonment

Mineral exploration and development drill holes and monitoring and production wells subject to NDWR regulations would be abandoned in accordance with applicable rules and regulations (NAC 534.420, and 534.425 through 534.428). Boreholes would be sealed to prevent cross contamination between aquifers and the required shallow seal would be placed to prevent contamination by surface access (closure as per NAC 534.420).

Monitoring wells would be maintained until EML is released of this requirement by the NDEP or NDWR. These wells would then be plugged and abandoned according to the requirements of the State Engineer.

2.1.16.18 Concurrent Reclamation

Some of the Project facilities or portions of the Project facilities would be decommissioned prior to final mine closure. These areas would be reclaimed concurrently with the active mining operations.

Concurrent reclamation would take place on completed and inactive portions of the WRDFs as soon as would be practical and safe. Growth media stockpiles would be interim seeded following construction and the area reclaimed after the soil is used in reclamation.

2.2 Alternatives to the Proposed Action

The NEPA (42 U.S.C. 4322(E)) requires that an EIS "... study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." Section 6.6.1 of the BLM NEPA Handbook directs that a "...range of alternatives explore alternative means of meeting the purpose and need for the action. ... In determining the alternatives to be considered, the emphasis is on what is reasonable ... Reasonable alternatives include those that are practical or feasible from the technical or economic standpoint and using common sense..." In addition, EIS preparers are directed to "consult program-specific guidance for additional requirements on alternatives." Specific guidance for this **Final** EIS includes the BLM NEPA Handbook, BMDO guidance, and the regulations under 43 CFR 3809.

The analysis of alternatives in this EIS is based on the following criteria: a) public or agency concern; b) technical feasibility; c) potential to reduce an environmental impact of the Proposed Action; d) ability to meet the purpose of and need for the Proposed Action; and e) compliance with regulatory and legal guidance (i.e., **MMPA**). **In determining the alternatives to be considered, the BLM emphasizes what is "reasonable". Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint. Though not required, the BLM may elect to analyze in detail an alternative that might otherwise be eliminated from further analysis in order to assist in the planning or decision-making process.**

The Scoping Summary outlined comments received during public scoping, and included recommendations from commenters on alternatives to be analyzed in this EIS. The Scoping Summary is on file and available for review at the BLM's MLFO during normal business hours. Alternatives to the Proposed Action derived through the scoping process (internal and public) include the following:

- No Action;
- Different waste rock dump heights;
- Partial backfilling;
- Complete backfilling;
- Different powerline route;
- Different facility locations outside the Project Area;
- Different facility locations within the Project Area;
- Increased ore processing to match the mining schedule;
- Decreased mining to match the ore processing schedule;
- Reduced project;
- Slower, longer project; and
- Off-site transfer of ore concentrate for processing.

The following section of the EIS discusses alternatives to the Proposed Action and identifies four alternatives which are to be analyzed in the remainder of the EIS, in addition to the Proposed Action. The four alternatives include: the No Action Alternative; the Partial Backfill Alternative; the Off-Site Transfer of Ore Concentrate for Processing Alternative; and the Slower, Longer Project Alternative.

Mine operations are composed of a number of facility components. There can be alternative means and locations to implement these components in most settings. However, these alternative means are limited by the location of the mineral deposit, land and mineral ownership, and existing physical constraints, both natural and manmade. For the Proposed Action varying the location of a number of the proposed facilities is constrained by topographic features, existing transportation networks, surface ownership, **and** ore body location.

2.2.1 No Action Alternative

In accordance with BLM NEPA guidelines H-1790-1, Section 6.6.2 (BLM 2008a), the EIS evaluates the No Action Alternative. The objective of the No Action Alternative is to describe the environmental consequences that would result if the Proposed Action were not implemented. The No Action Alternative forms the baseline from which impacts of all other alternatives can be measured.

Under the No Action Alternative, EML would not be authorized to develop the Project and mine the Mount Hope ore body as currently defined under the Proposed Action. The No Action Alternative would result from the BLM disallowing the activities proposed under the Plan (EML 2006). However, EML would be able to continue exploration activities as outlined in previously authorized Notices. Refer to Section 1.3 for a discussion of the existing Notice level activities. The area would remain available for future mineral development or for other purposes as approved by the BLM. Any additional activities proposed within the area would be analyzed under their own site specific NEPA analysis at the time they are proposed.

2.2.2 Partial Backfill Alternative

Under this alternative, the Proposed Action would be developed as outlined in Section 2.1 and have the same surface disturbance footprint. However, at the end of the mining in the open pit, the open pit would be partially backfilled to eliminate the potential for a pit lake. The pre-mining ground water elevation in the vicinity of the open pit varies from northwest to southeast across the open pit from approximately 7,200 feet to 6,750 feet amsl. Therefore, the open pit would be backfilled to an elevation that varies from northwest to southeast across the open pit from approximately 7,300 to 6,850 feet amsl. The Partial Backfill Alternative addresses potential impacts associated with a pit lake that would develop under the Proposed Action as well as reduce the visual effects associated with the Proposed Action.

The backfilling would commence in Year 32 and be completed in approximately 13 years (95 million tpy). The partial backfilling would be accomplished by the same fleet and personnel that completed the mining, and as a result, employment would be approximately 370 employees through the end of ore processing (Year 44) with a reduced staffing from Year 44 through the completion of the partial backfilling (Year 45). The partial backfilling would be completed using approximately 1.3 billion tons of waste rock, which would comprise all the waste rock from the Non-PAG WRDF resulting in an elimination of the Non-PAG WRDF. This material would be removed from the completed WRDF and transported back to the open pit. The partial backfilling would need to be completed to an elevation that ranges across the open pit from 7,300 to 6,850 feet amsl. Figure 2.2.1 shows the configuration of the Project **following the completion of the backfilling and reclamation**. As a result of this alternative, the mining fleet and the associated employees would continue beyond the end of the mining sequence to complete the

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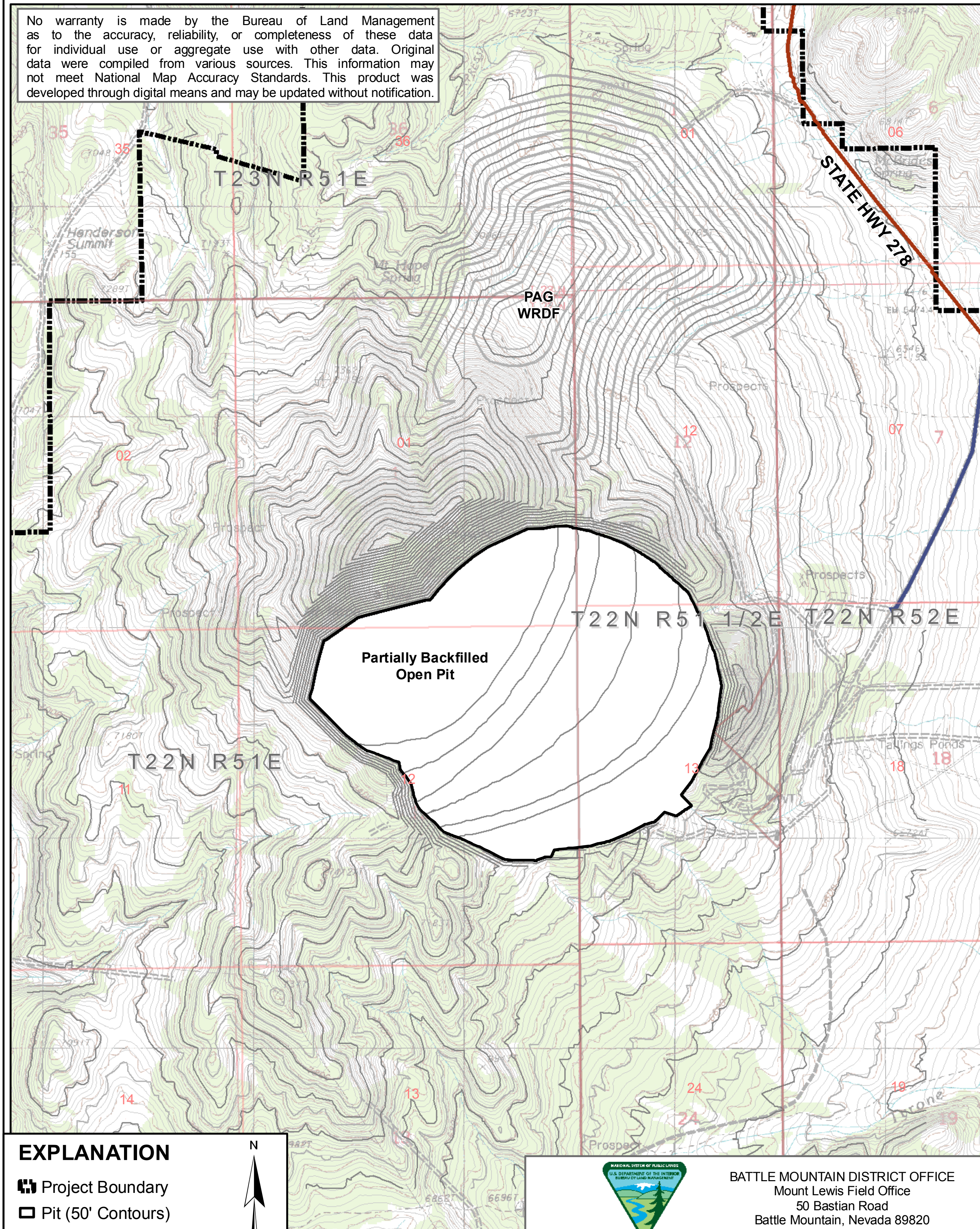

EXPLANATION

- Project Boundary
- Pit (50' Contours)
- Unpaved Road
- State Hwy 278
- Access Road

0 1,000 2,000 3,000 Feet

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MOUNT HOPE PROJECT

DESIGN: EMLLC	DRAWN: CVD/GSL	REVIEWED: RFD
CHECKED: -	APPROVED: RFD	DATE: 05/02/2011
FILE NAME: p1635_Fig2-2-1_PartialBackfillAlt.mxd		

DRAWING TITLE:

Partial Backfill Alternative

Figure 2.2.1

backfilling activities. Tax revenues would be similar to the Proposed Action over the 44-year life of this alternative. Under this alternative, the floor of the open pit would be reclaimed with an application of growth media and then seeded.

2.2.3 Off-Site Transfer of Ore Concentrate for Processing Alternative

Under this alternative, the open pit, WRDFs, and TSFs would be developed as outlined under the Proposed Action; however, the ore processing facilities would include only the milling operations and production of the molybdenum sulfide concentrate. The TMO and FeMo portions of the processing facility would not be constructed, and as a result, the surface disturbance footprint would be approximately 20 acres less than under the Proposed Action. In addition, the leaching of the concentrate would likely not be done on site. The production of molybdenum sulfide concentrate would occur at an average rate of approximately 45.8 million pounds per year. This material would be stored at the Project Area in a concentrate storage structure adjacent to the mill. The molybdenum sulfide concentrate would be loaded from this storage facility into street legal haul trucks with covered containers and transported on the public transportation system to either an existing or new TMO facility. Employment, relative to the Proposed Action, would be reduced by approximately 30 individuals. Tax revenues would be similar to the Proposed Action over the 44-year life of this alternative.

2.2.4 Slower, Longer Project Alternative

Under this alternative the Project would operate at approximately one-half the production rate as described in the Proposed Action, which would result in a project that would last approximately twice as long as the Proposed Action.

Under this alternative, the currently planned 96 million short tons per year (st/y) mining rate would be reduced to 48 million st/y and the mill throughput would be reduced from 60,500 short tons per day (st/d) of ore to 30,250 st/d. Although salable Mo production on an annual basis would drop in half, the ultimate mine and associated waste and low-grade stockpiles, process plant, and tailing impoundments would still cover the same area, creating the same amount of disturbance. However, **some aspects of environmental disturbance (i.e., wildlife) would be greater due to the extended duration and impacts to additional springs.**

Under this alternative, smaller equipment than outlined under the Proposed Action would need to be purchased. Thus, the manufacture lead times for this new equipment may result in construction time frames that are longer than outlined in the Proposed Action, because the equipment is not yet available. This would also delay the commencement of operations of the Project. The Project production timeframe under this alternative would extend to at least 88 years.

It is likely that initial capital costs for this alternative would be reduced; however, this difference cannot be quantified without completing a re-design of the facilities. It is expected that sustaining capital costs would actually increase due to the much-extended operating life and operating cost (expressed as total cost per pound of production) would rise due to increased proportion of fixed costs and the higher per unit of ore variable costs of a smaller scale operation. More serious diseconomies of scale would affect the plant during the final two decades of production when treating the low-grade ore (grading 0.042 percent Mo), which would be set aside for milling following the end of the open pit mining phase.

An alternative with half the annual production of the Proposed Action has not been designed **since this alternative was not determined to be economically feasible by EML**; however, for the sake of comparison, there are several facets of a half-production rate project that could be anticipated. Mining and processing equipment would be smaller, as would ancillary facilities (powerline supply and well field **infrastructure** for example). However, ultimate disturbance from the tailings impoundments, open pit and waste rock disposal facilities would eventually grow to the same size as in the Proposed Action, albeit at half the rate. Water consumption rates would be approximately half, although economies of scale (lower per unit operational cost when there are greater throughputs) would be lost, and water consumption on a per-unit basis would be higher than in the Proposed Action (i.e., more evaporation on a per unit basis than under the Proposed Action**) because the open water in the tailings pond would exist for twice as long during the processing of the same amount of ore. Therefore, this alternative would likely result in twice as much evaporation**. The smaller plant size would likely result in a slight decrease in the number of construction employees. Operations employee members would be less than that required for the Proposed Action (regardless of the size of mine or mill equipment, it generally takes the same number of employees to operate and maintain it). It is estimated that the decrease in operations employment for the half-production alternative would be about 30 percent. The employment timeframe would be twice as long as under the Proposed Action. Reagent consumption would be the same on a per-unit (of production) basis, but the smaller consumption rate would decrease storage requirements and material shipments. Profitability would be reduced, as would tax revenues. Tax revenues would be reduced by approximately 40 percent, relative to the Proposed Action, in the first 44 years of this alternative.

While the Slower, Longer Project Alternative may not meet the purpose and need as stated in Section 1.4, the BLM elected to analyze this alternative in detail at the request of a cooperating agency (Eureka County). The BLM's decision is consistent with its responsibility as the lead agency according to "A Desk Guide to Cooperating Agency Relationships and Coordination with Intergovernmental Partners" (BLM 2012a) and 40 CFR 1501.6.

2.2.5 Alternatives Considered and Eliminated from Detailed Consideration

Several alternatives were identified for consideration in this **Final** EIS. The following is a discussion of those alternatives identified through the scoping process, including alternatives identified by the public, that have been eliminated from detailed consideration in this **Final** EIS. The alternatives were considered relative to the criteria outlined in Section 2.2.

2.2.5.1 Complete Backfilling Alternative

This alternative would involve the complete backfilling of the proposed Mount Hope open pit with Mount Hope overburden and waste rock material in the two WRDFs. A Complete Backfill Alternative would primarily address potential visual impacts **and evaporation impacts** associated with the Proposed Action. Even though this alternative would address the creation of a pit lake, the intent of this alternative is not to address this issue since the pit lake issue is addressed under the Partial Backfill Alternative. The Partial Backfill Alternative is discussed under Section 2.2.2, and the associated impacts are outlined in Chapter 3.

Based on the mine plan and pit configuration, backfilling could not begin until the end of the mining sequence. Under this alternative, the same amount of surface disturbance would occur as under the Proposed Action because the backfill material would be hauled to the WRDFs so that the Mount Hope open pit could be mined. Once the ore was removed from the open pit the waste rock and overburden would then be hauled back from the WRDFs to the open pit. The backfill would likely commence in Year 32 and be complete in approximately Year 64, resulting in a project that is 20 years longer than the Proposed Action. The rim of the open pit has varying elevations. At the southeast corner of the open pit the pit rim elevation is approximately 6,900 feet amsl. The northwestern corner of the open pit is part of the high wall cut into Mount Hope, which has an elevation of 8,200 feet amsl. The ore to waste ratio is 1:1.6 and the swell factor for the volume difference for the mined and handled waste rock as compared to unmined rock is conservatively assumed to be 20 percent. Therefore, the waste rock volume would be insufficient to completely fill the open pit. As a result, the northwestern portion of the open pit would remain with a highwall on the southeastern flank of Mount Hope, and the WRDFs would be eliminated. The complete backfilling of the open pit would be accomplished by the same fleet and personnel that completed the mining, and as a result, employment would be approximately 370 through the end of ore processing (Year 44) with reduced staffing from Year 44 through the completion of the complete backfilling (Year 64).

Backfilling the open pit would result in covering additional mineral resources that would not be currently considered ore, such as the lower grade Mo mineralization in the open pit wall and the other metal mineralization that is known to occur in the surrounding host rock adjacent to the open pit walls. While this is not a reason to eliminate this alternative from detailed consideration, this scenario would be inconsistent with the **M**MPA [30 U.S.C. 21a] and the Materials and Mineral Policy, Research, and Development Act of 1980 [30 U.S.C. 1601], because it would reduce the opportunity for future mineral development associated with the mineralizing system in the Mount Hope area.

This alternative would decrease visual impacts from the Proposed Action to the Historic Trail but not below the level of significance. Although visual impacts would be reduced, the area is classified as Visual Resource Management (VRM) Class IV, and implementation of the Proposed Action would be consistent with the restrictions on VRM Class IV areas. The pit would remain visible due to insufficient backfill material. This alternative would increase air quality impacts resulting from increased transport of waste rock material and would decrease the opportunity for future extraction of potential mineral resources. The mining work force for the project would be employed for a longer time period to accomplish the backfilling operations. In addition, this alternative would have similar potential impacts as the Partial Backfill Alternative. **Under this alternative, the ground water quality within the pit backfill would be anticipated to be impacted by waste materials (Non-PAG) deposited in the open pit and from infiltrating the runoff from pit walls. This poor-quality water could flow from the confines of the former pit shell into the surrounding ground water, degrading waters of the state.** For these reasons, the Complete Backfill Alternative does not meet the criteria under Section 2.2 and has been eliminated from detailed consideration.

2.2.5.2 Different Waste Rock Disposal Facility Heights Alternative

Under this alternative, the WRDF configurations would be changed so that the WRDF heights would vary. Lower heights on the southern portion of the WRDF would be established in an effort to reduce the impacts to the Pony Express Historic Trail setting. As a result, the footprint of the WRDFs would be increased to accommodate the change in storage volume. This would include the time necessary to construct the WRDFs, assuming the same equipment fleet as under the Proposed Action, and therefore increase the length of time necessary to complete the mining of the open pit. Therefore, activities under this alternative would occur over a longer time period in comparison with the Proposed Action. This alternative would increase the amount of surface disturbance and, therefore, the impacts to vegetation, wildlife, and soils, as well as increasing air emissions, due to the increased time frames for mining and longer haul distances during the life of the Project. This alternative would decrease, but not substantially reduce, the impacts to the Pony Express Historic Trail setting in comparison with the Proposed Action. For these reasons, the Different Waste Rock Disposal Facilities Height Alternative does not meet the criteria under Section 2.2 and has been eliminated from detailed consideration.

2.2.5.3 Different Facility Locations Outside the Project Area Alternative

This alternative considers different locations outside of the Project Area for major mine components (i.e., open pit, waste rock disposal, tailings facility) which would create the principle environmental impacts from the Proposed Action.

As part of the development of the Proposed Action by EML, three basic TSF configurations were evaluated by EML as follows: a) a TSF to the west of SR 278 and east of the open pit; b) a TSF south of the Pony Express Historic Trail; c) a TSF to the east of SR 278. The first configuration had three variations; the second and third configurations each had two variations. As a result, seven TSF configurations were considered by EML during the development of the Proposed Action. A copy of the EML's decision matrix is incorporated in this EIS as Appendix **B**. The configuration that was selected by EML's Proposed Action minimizes the potential impacts to SR 278, Diamond Valley, deer migration routes, and the Pony Express Historic Trail.

The location of the proposed open pit is strictly dictated by the location of the identified ore deposit; therefore, no location alternatives for the open pit would be possible. The proposed location of the Project WRDFs was selected by EML after consideration of several operational, cost, and environmental factors that included the following: a) minimizing truck haul distance; b) minimizing the gradient from the open pit to the WRDFs; c) adequate waste rock storage capacity; d) avoidance of sensitive environmental receptors; e) consolidation of mine facilities; and f) absence of suitable mining reserves below the WRDFs.

Relocating either the WRDFs or the TSF as described in the Proposed Action to locations outside of the Project Area would not avoid any of the environmental effects, nor lessen below the level of significance. This alternative would result in increased surface disturbance and air emissions associated with longer haul distances. The visual impacts under this alternative would not be lessened, but would be redistributed based on the location of the facilities. For these reasons, the Different Facility Locations Outside the Project Area alternative does not meet the criteria under Section 2.2 and has been eliminated from detailed consideration.

2.2.5.4 Increased Ore Processing to Match the Mining Schedule Alternative

Under this alternative, the ore processing facility would process the ore at the same rate that it would be mined under the Proposed Action, thereby requiring construction of an ore processing facility with greater throughput capacity. As a result, the Project would be in operation for 32 years rather than the 44 years under the Proposed Action. Under this alternative, there would be an approximately one to two percent increase in the number of employees above that expected under the Proposed Action. However, the length of employment for almost all the positions would only be 32 years.

This alternative would increase yearly air emissions during the life of the Project by approximately 50 percent and decrease length of employment opportunities due to the reduced life of the project in comparison to the Proposed Action. Socioeconomic impacts, both positive and negative, would be reduced as compared to the Proposed Action because tax receipts and wages would occur over a shorter time period and not necessarily at a proportionally greater amount than under the Proposed Action. In addition, the demands on the local infrastructure made by employees and other Project-related individuals would be of shorter duration than the Proposed Action. In addition, implementation of this alternative would not reduce any of the other environmental consequences of the Proposed Action and, therefore, does not create any environmental advantage in comparison with the Proposed Action. For these reasons, the Increased Ore Processing to Match the Mining Schedule Alternative does not meet the criteria under Section 2.2 and has been eliminated from detailed consideration.

2.2.5.5 Decreased Mining to Match the Ore Processing Schedule Alternative

Under this alternative, the mining rate would be decreased to match the ore processing rate under the Proposed Action. This alternative would decrease air emissions during the first 32 years of the Project due to the slower mining rates and increase air emissions during the last 12 years of the Project, because mining would occur during these last 12 years of the ore processing, in comparison with the Proposed Action. The alternative would extend and increase the ground water impacts due to the need to dewater the open pit for an additional 12 years, decrease employment opportunities due to the smaller mining operation, and change the socioeconomic impacts, because of the smaller work force, in comparison with the Proposed Action. The complete reclamation of the WRDFs would be postponed. Implementation of this alternative would not result in any compelling environmental advantage relative to the Proposed Action. For these reasons, the Decreased Mining to Match the Ore Processing Schedule Alternative does not meet the criteria under Section 2.2 and has been eliminated from detailed consideration.

2.2.5.6 Reduced Project Alternative

A Reduced Project Alternative would result in the construction of a smaller open pit and smaller associated facilities. As a result of the smaller scale operation under this alternative, there would **be** a reduction in the impacts to soils, vegetation, air quality, and ground water in comparison with the Proposed Action because there would be less surface disturbance, less air emissions, and less dewatering. However, this alternative would increase the potential impacts to known mineral resources by not developing the defined mineral resource that would be mined under the Proposed Action, which would not be consistent with the national mineral policy outlined in the MMPA. In addition, this alternative would have smaller water supply production operations, as well as decreased employment opportunities and reduced socioeconomic impacts. This alternative does not meet the Purpose and Need of the Proposed Action as defined in Section 1.4, because the known mineral deposit would not be fully mined **and it would not be economically feasible**. For these reasons, the Reduced Project Alternative does not meet the criteria under Section 2.2 and has been eliminated from detailed consideration.

2.2.5.7 Different Facility Locations within the Project Area Alternative

This alternative considers different locations within the Project Area for the major mine facilities (i.e., open pit, TSFs, WRDFs, and processing plant), which would create the principal impacts under the Proposed Action. As discussed above, an evaluation of different facility locations was conducted by EML in their feasibility evaluation of the Project; this evaluation is included in this EIS as Appendix **B**.

Analysis of different locations under this alternative is similar to that for the Different Facility Locations Outside the Project Area Alternative (Section 2.2.5.3). This alternative does not meet the criteria under Section 2.2 and has been eliminated from detailed consideration because of the substantial logistical and transportation disadvantages, and because it would result in increased surface disturbance.

2.2.5.8 Different Powerline Alternative

Under this alternative, the Proposed Action would be developed as outlined in Section 2.1. However, the connection to the regional power grid would be in a different location as would the powerline route to the Project facilities.

A new substation for the Project would be located immediately south of the South TSF where the NV Energy 345-kV Falcon-Gondor powerline intersects the Project Area. The new substation would tie directly into the existing NV Energy 345-kV Falcon-Gondor powerline. The substation would be designed to provide the power necessary for Project operation. From the new substation, the Project powerline would follow the same route through the Project Area as the powerline under the Proposed Action. This alternative would eliminate the need to construct a new powerline, adjacent to the Falcon-Gondor powerline from the existing Machacek Substation to the Project Area, through the western portion of Kobeh Valley.

Power for the Project was investigated by NV Energy in early 2007. NV Energy determined that two feasible power supply options existed for the Project. The 230-kV option with a tap at the Machacek Substation was selected over the 345-kV option. Design, cost, and reliability issues were considered. In addition, the 345-kV line serves as the "backbone" for electrical distribution in the area, which would make a tie-in problematic with respect to schedule and the duration of service interruption. As a result, the use of 345-kV line was determined to be technically infeasible. EML entered into a transmission agreement with NV Energy in late 2008 for 75 MW, substantiating that the 230-kV system at Machacek can provide sufficient power for the Project. The Project is located within the **NV Energy and** Mt. Wheeler Power service territory.

2.2.5.9 Different PAG Waste Rock Management Alternative

Under this alternative, the Proposed Action would be developed as outlined in Section 2.1, except a different management technique would be used with the PAG waste rock. A single WRDF would be constructed, and the PAG material would either be managed in isolation cells within the WRDF, or the PAG material would be mixed with the Non-PAG material throughout the life of the mining operation.

It is highly uncertain whether either of these management techniques would be successful in the management of the PAG material and thus minimize or eliminate the potential of the development of uncontrolled ARD or impacts to waters of the state. The timing of the mining of the PAG versus Non-PAG material would not allow for the mixing of the two material types to minimize the potential for the migration of the leached constituents. Placement of the PAG waste rock on a prepared base with solution collection and management provides for a higher level of protection with respect to potential impacts to waters of the state. This alternative does not meet the criteria under Section 2.2 and has been eliminated from detailed consideration because of the high degree of uncertainty and the increased risk of potential impacts to waters of the state.

2.3 BLM Preferred Alternative

Chapter 9, Section 9.2.7.3 of the BLM NEPA Handbook directs that an EIS "...identify the agency's preferred alternative. ... For external proposals or applications, the proposed action may not turn out to be the BLM's preferred alternative because the BLM would often present an alternative that would incorporate specific terms and conditions on the applicant."

Thus, the BLM has selected a Preferred Alternative based on the analysis in this EIS. This Preferred Alternative is the alternative that best fulfills the agency's statutory mission and responsibilities, giving consideration to socioeconomic, environmental, technical, and other factors. The BLM has determined that the Preferred Alternative is the Proposed Action as outlined in Chapter 2 of the **Final** EIS, with the inclusion of the identified mitigation measures to the Proposed Action as specified in Chapter 3 of the **Final** EIS.

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